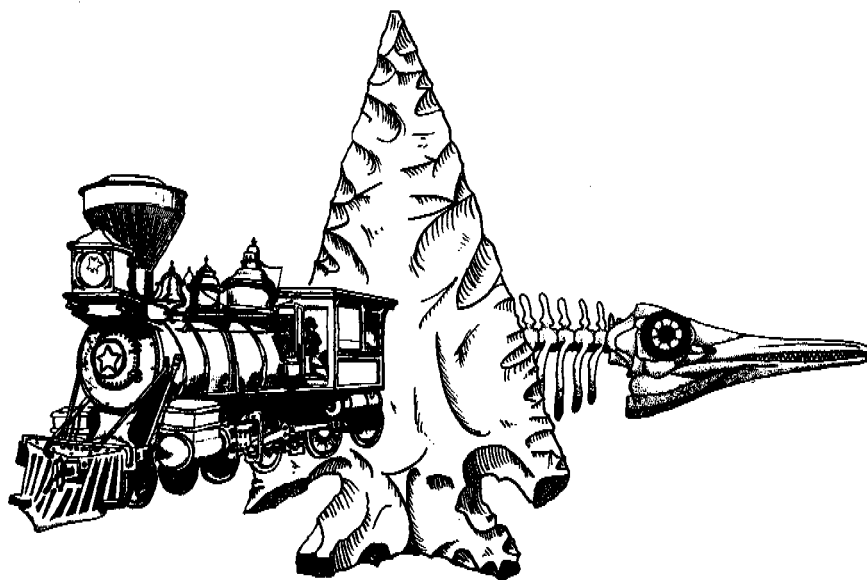


BUREAU OF LAND MANAGEMENT
NEVADA

CONTRIBUTIONS TO THE STUDY OF CULTURAL RESOURCES



EMIGRANT TRAILS
IN THE
BLACK ROCK DESERT

TECHNICAL REPORT NO. 6

RENO, NEVADA



APRIL, 1980

EMIGRANT TRAILS

IN THE

BLACK ROCK DESERT

A Study of the
Fremont, Applegate-Lassen, and Nobles' Routes
in the Winnemucca District

U.S. Department of the Interior
Bureau of Land Management

Supplement to
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Submitted by:

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Winnemucca District, Nevada

July 1978

ERRATUM

p.56, 2nd para, 12th line. For "Fox Range", read "Black Rock Range".

Forward

The present study focuses on portions of the Fremont, Applegate-Lassen and Nobles routes and associated historic features located in Northwestern Nevada. This project is part of the ongoing effort to identify and evaluate potential conflicts between the preservation of significant historic resources and exploration and development of geothermal energy sources in the Black Rock Desert. The report documents various aspects of the trail and sites by correlating first hand accounts written by early emigrants, interviews with present-day local residents and historians, reference to early government survey maps, and field observations performed by BLM archeologists in recent years.

The Applegate-Lassen Trail, a side trail of the main California Trail designed to be an alternative to the Oregon Trail, was pioneered in 1846 for emigrant travel. The trail which follows a series of hot and cold springs in the Black Rock region traverses a broad variety of natural areas including the extensive desert playa and the rugged High Rock Canyon. The trail was considered a very difficult route to follow by the emigrants. Modern developments are rare in the area and traces of the trail are as well preserved as any in the far west. The trail is on the National Register of Historic Places and has been proposed as a National Monument largely due to the unchanged nature of the total landscape over the past 130 years.

Richard C. Hanes
BLM, Nevada State Office
June, 1980

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Introduction

Statement of Purpose

In 1976 the Interior Board of Land Appeals remanded 14 geothermal leases in the Black Rock Desert to the Bureau of Land Management for further study. Documentation of emigrant trails in the area, as presented in the Oil and Gas/Geothermal EAR for the Buffalo Hills Planning Unit, was judged insufficient as a basis for rejection of these lease applications. Consequently, a more intensive study of the emigrant trails and historic sites within the Black Rock Desert was undertaken by the BLM. The following report is a result of this research.

Though the main area of contention at present is the Black Rock Desert, this report covers the entirety of the Fremont, Applegate-Lassen, and Nobles' Routes within the boundaries of the Winnemucca District of the Bureau of Land Management.

In the following pages a short history of each trail is presented as well as a more detailed description of each of the major trail segments. These descriptions are supplemented by excerpts and illustrations from the journals of emigrants who traveled these routes as well as by photographs of watering/resting spots and existing physical trail traces as they appeared at the time of this investigation. Where traces of trail are still apparent, mention of these are made in the text and their locations plotted on Map 17. Also indicated on Map 17 is the route of the trail where there are no apparent physical traces but where it's location can be very accurately inferred. The final section of this report offers suggestions concerning the degree of protection warranted by individual segments of the trail.

Research Methods

Several aids were used in determining the location of the trails. These are as follows:

1. Emigrant Journals

Many of the wagon trains had official and unofficial diarists who documented the route of travel and important events in day by day accounts. Photocopied and microfilmed journals for these trails were gathered from various libraries and archives and taken into the field. Descriptions of geography, distances traveled, and sketches of landmarks were utilized in ascertaining the location of the trails. In general, these proved to be very accurate and helpful, particularly the detailed descriptions and illustrations of Goldsborough Bruff and the accounts of Alonzo Delano and John C. Fremont. Excerpts from the journals referring to particular segments of the trail are included in the main body of this paper, as well as sketches by Bruff of various features and corresponding present-day photographs.

Excerpts from emigrant diaries have been included, not only to demonstrate that the trail can be accurately pinpointed with their specific descriptions, but also to give a feeling of the trail as the emigrants experienced it 130 years ago.

2. Aerial Photos and Flights Over the Trails

Aerial photos covering the areas in which the trails were determined to have traversed were examined for existing traces of the trail. Also, the entire Applegate-Lassen Trail within the District was flown over and particularly clear traces of the trail were photographed. In some areas the trail appears much more clearly from the air than from the ground, due to vegetation changes which are more readily apparent from above.

3. Interviews With Old-timers and Historians of the Trails

Though none of the original emigrants are still living, there are old-timers in the area who passed over the trails when they were still intact and who had the opportunity to listen to the stories of the early trail travelers. Of particular help was Bill James of Humboldt Station, Nevada, who has lived in the Inlay area since 1912. As a coyote trapper, he ranged the lands and came to know well the trails of the area. For the present investigation, Mr. James drew a rough map of the Applegate-Lassen and Nobles' Routes as he knew them, then came into the field to point out traces of the trail between Callahan Bridge and Antelope Springs.

Also, the following emigrant trail authorities were consulted concerning history, location, and remaining traces of the trail:

- a. Robert Amesbury is the author of Nobles Emigrant Trail, the only book on the Nobles' Route. He has walked, ridden horse-back, and flown over the entirety of the Nobles' Route and explored its archival records.
- b. Thomas Hunt is the co-author of Ghost Trails To California. Mr. Hunt has studied extensively the original records of the Applegate-Lassen, Nobles', and Fremont Routes and has traced the major part of these trails in the Winnemucca District on foot, by car, and from the air.
- c. Dr. Vincent Gianella is a prominent geologist who has made a thorough study of Fremont's route. He has walked or driven over the entire route within the District.

- d. Dr. Robert Griffin is a representative of Trails West, a trail-marking organization which has marked the main camping sites of the Fremont, Applegate-Lassen, and Nobles' Routes within this District and elsewhere. Dr. Griffin, himself, has walked or driven over all of these trails.
- e. Devere Helfrich is a foremost expert on the Applegate-Lassen Trail. His publication of the Applegate-Lassen Trail in Klamath Echos was researched thoroughly by himself and his wife over the past several years.

Through personal interviews, letters, and telephone communications, these people conveyed their knowledge of the trails from years of research and fieldwork. Also consulted were several other local residents who traveled the routes of the early emigrants in times when the trails were more clearly marked by artifacts and less obscured by vehicular traffic use.

4. Fieldwork

Certain segments of the route were surveyed on foot. However, due to restrictions of time and weather, only a small portion of the entire trail system was surveyed intensively. Where the trail followed current roads or was in proximity to them, it was traced by motor vehicle. Artifacts of the trail, including bits of metal, bone, and wood, were noted and photographed.

5. Old Maps, Records, and Literature on Trail

Numerous secondary sources listed in the bibliography were consulted for general history of the trails and the Black Rock Desert area. Old government survey maps, recorded on Historic Survey Plats (Appendix I) filed at the Winnemucca District Office, were studied for documentation of trails. These maps, made by surveyors during the mid-1800s to early 1900s, were of variable assistance. In combination with other source material, they were at times invaluable in ascertaining from the air or aerial photos, which of the many dirt roads was actually the old emigrant route. Some sections, however, were quite inaccurately mapped with features, such as rivers and mountains, distorted, absent, or added on. The plot of the trail route in these sections was not deemed accurate and other sources were relied on to chart it.

- 6. Additionally, common sense was employed. It was assumed that the emigrants, with their cumbersome wagons and heavyfooted oxen, would take the smoothest, most direct route between two points and a route which would provide adequate water for themselves and grass and water for their animals. Where there was a broad plain, the pioneers would be expected to spread out to avoid traveling in each others dust. Prominent landmarks were used as guidepoints when available, and, except for circumventions of difficult terrain or side trips to a water or forage supply, the course was generally arrow straight toward the landmark.

John C. Fremont Trail

The Black Rock Desert was first explored by John C. Fremont in his Western Expedition of 1843 and 1844 and his Report of the Exploring Expedition to the Rocky Mountains provides a wealth of geographical, geological, cartographic, and botanical information. Between Fremont's notes on the areas he was passing through and the detailed maps of his cartographer, Charles Preuss, the Fremont route through the Winnemucca District can be quite accurately pinpointed. In Map 1 (Map 3 of Fremont's "Map Portfolio") Preuss traces the route followed by the expedition of '43 and '44, circling in campsites and designating the path of travel with a dotted line. Table 1, taken from Fremont's report, lists the latitudinal and longitudinal readings for each of these campsites.

Dr. Vincent Gianella of the University of Nevada has walked or driven over all of the Fremont route within the District using Fremont's report and maps. In a telephone interview, July 28, 1977, he confirmed that Preuss's cartographic representations of the geography of the regions the explorers passed through were extremely accurate and that, equipped with the map, the latitudinal and longitudinal readings, and Fremont's descriptions, the route followed in '43 and '44 was quite traceable. Dr. Griffin (personal communication, July 7, 1977), of Trails West organization, who has also retraced the Fremont route on foot and by car was of a similar opinion.

The map drawn by Preuss is a "white space" map showing only the features visible to him at the time. During the time he was drawing the Black Rock area, snow cloaked much of the topography and fog at times hid much of the rest of it. Despite these handicaps, Preuss achieved a map that represents the lay of the land remarkably well. All major features are readily identifiable when latitudinal data is employed. Fremont's route, as drawn on Map 17, was plotted utilizing information from Fremont's report, distances, bearings, and major features as portrayed on Map 1, and latitude-longitude data as recorded on Map 1 and Table 1.

The following is a description of the route taken by Fremont.

Fremont entered the District through High Rock Canyon on December 31, 1843. Heading east he traveled across the northern shore of High Rock Lake, a lake basin which is intermittently full, but which was dry at that time (as it was in July 1977 when visited). From here he continued eastward through Fly Creek Canyon and into Mud Meadows where a dreary New Year's Eve was spent camped in Mud Meadows (Gianella, personal communication, July 28, 1977).

The following is Fremont's description of this stint of the journey:

"The valley opened out, and before us again lay one of the dry basins [High Rock Lake]. After some search, we discovered a high-water outlet [Fly Canyon] which brought us in a few miles, and by descent of several hundred feet, into another long broad basin [Mud Meadows] in which we found the bed of a stream [Mud Meadows Creek] . . . Here we concluded the year 1843" (Fremont 1845:[Dec. 31, 1843] 213).

On January 1st the Fremont expedition continued south through the Black Rock Desert and camped by Mud Meadows Creek about halfway along the Black Rock Range. From there they traveled down the bed of Mud Meadows Creek and on past Black Rock Springs which was recorded at 175°F:

"New Years Day 1844 - We continued down the valley [Black Rock Desert], between a dry looking black ridge on the left [Black Rock Range] and a more snowy and high one on the right [Calicos].

Our road was bad along the bottom, being broken by gullies and impeded by sage, and sandy on the hills, where there is not a blade of grass, . . . we directed our course towards a black cape [Black Rock], at the foot of which a column of smoke indicated hot springs [Black Rock Springs].

January 2 . . . We traveled along the bed of a stream [Mud Meadows Creek] in some places dry, in others covered with ice . . . through deep fine sand, rendered tenacious by a mixture of clay . . . we reached the hot springs [Black Rock Springs] of which we had seen the vapor the day before . . . [and] passed the rocky cape, a jagged broken point, bare and torn [Black Rock]." (Fremont 1845:214)

From Black Rock, Fremont continued his journey southeast to the edge of the Black Rock Desert near Rabbit Hole Wash and then southwest to the mountain just south of present-day Trego which he ascended. Seeing the column of smoke marking Great Boiling Springs (Figure 1), they again crossed the Black Rock to visit the springs near the present town of Gerlach:

"January 2, We crossed the large dry bed of a muddy lake [Black Rock Desert] in a southeasterly direction, and encamped at night without water and without grass, among sage bushes covered with snow . . . January 3, We traveled seven or eight miles along the ridge bordering the valley and encamped on the bed of a hill torrent.

"January 4, we traveled a few miles around the western point of a ridge, and encamped where there were a few tufts of grass, but no water . . . January 5, We moved to a place where there was a little better grass, about 2 miles distant. . . . January 6, I ascended the mountain (near Trego) and in the southwest corner of a basin communicating with that in which we had encamped, we saw a lofty column of smoke [Great Boiling Springs], 16 miles distant . . . [and] I determined to steer in that direction. Entering the neighboring valley, and crossing the bed of another lake, after a hard days travel over yielding mud and sand, we reached the springs" (Fremont 1845:215)

Fremont's party camped at the Great Boiling Springs for two days while Fremont, Kit Carson, and another scout continued south to locate their next camp spot at Cottonwood Creek. The rest of the party followed. From there they continued down the western edge of the San Emedio Desert at the base of the Fox Range until they arrived at Pyramid Lake.

"Taking with me Godey and Carson, I made today a thorough exploration of the neighboring valleys and found in a ravine in the bordering mountains a good camping place, where there was water in springs, and a sufficient quantity of grass for a night. Overshading the springs were some trees of sweet cottonwood . . . to us they were eloquent of green prairies and buffalo. We found here a broad and plainly marked trail, on which there were tracks of horses, and we appear to have regained one of the thoroughfares which pass by the watering places of the country. On the western mountains [Fox Range] of the valley [San Emedio Desert] with which this of the boiling spring communicates, we remarked scattered cedars.

. . . January 10, We continued our reconnaissance ahead, pursuing a south direction in the basin along the ridge [Fox Mountains]" (Fremont 1845:215)

Though Fremont's small party left no real physical trace of their route of passage, this same general route was used by the Applegate brothers in 1846 when they blazed the High Rock Canyon to Black Rock promontory portion of their trail. Fremont's notes and maps provided the only real information on the area and they were relied on heavily by the later trail blazers.

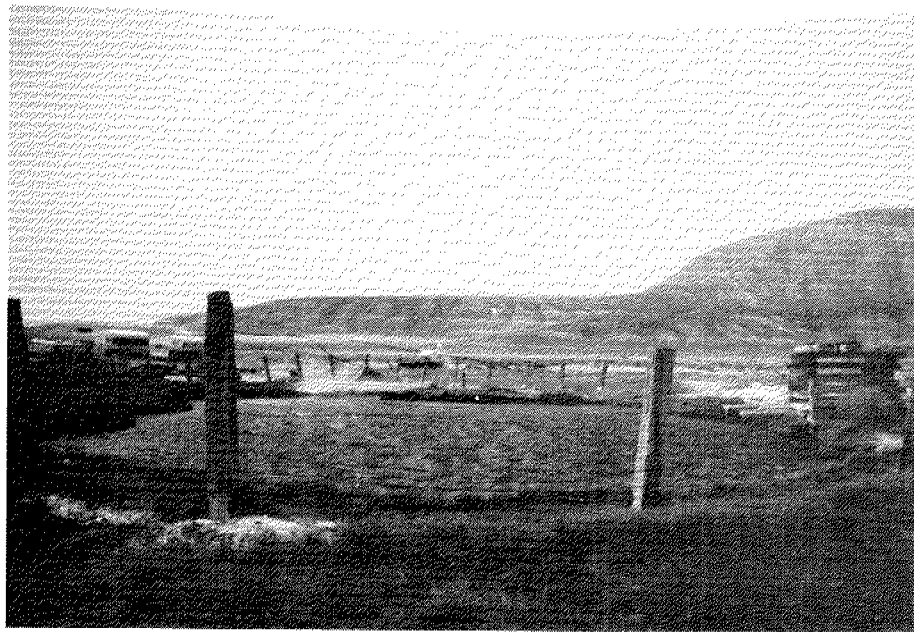


Figure 1. Great Boiling Springs,
first recorded by Fremont in 1844.

"WHITE SPACE" MAP
JOHN C. FREMONT
ROUTE 1843-44

..... PATH OF TRAVEL
O CAMPSITES

HIGH ROCK LAKE

MUD MEADOWS
CREEK

CALICO MTNS.

BLACK ROCK
HOT SPRINGS

FOX RANGE

RAZERBACK
MTN.

SELENITE RANGE

(JACKSON, DONALD AND
MARY LEE SPENCE (EDS.),
1970, MAP 3)

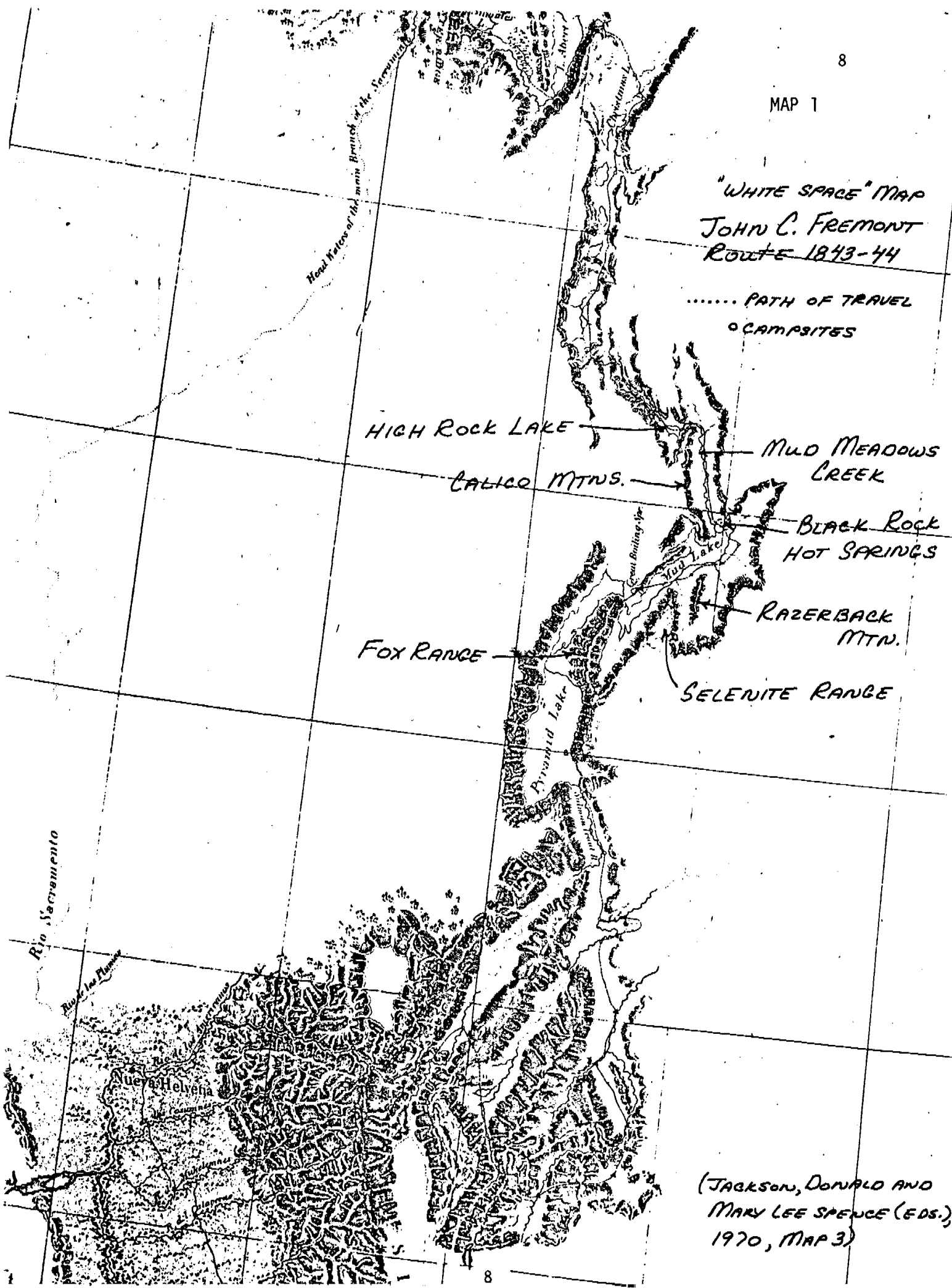
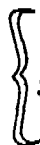


Table 1. Latitudes and longitudes of John C. Fremont 1843-44 Western Expedition campsites in the western Nevada region (from Fremont 1845: 325).

Date.		Latitudes.	Longitudes.	Localities.
1843.				
Nov.	27	45° 06' 45"	121° 02' 43"	South end of Toiyah prairie.
	30	44 35 23	121 10 25	Main branch of Fall river.
Dec.	5	43 55 20	-	Fall river, (Union Falls.)
	6	43 44 15	-	Fall river, (Union Falls.)
	7	43 30 36	121 33 50	Fall river, (Union Falls.)
	8	43 17 49	-	Camp in a pine forest.
	10	42 56 51	-	Tlamath lake.
	13	42 51 26	121 20 42	Tributary to the lake and head water of the Tlamath river.
	16	42 57 22	-	Summer lake.
	18	42 42 37	-	Summer lake.
	24	42 23 25	-	Christmas lake.
	26	42 00 09	-	Desert valley among black rocky hills.
	29	41 27 50	-	Camp of the 29th to 30th.
	31	41 19 55	-	New-year's Eve camp.
1844.				
Jan.	3	40 48 15	-	Camp near the Mud lake.
	6	40 39 46	-	Camp near Great Boiling spring.
	15	39 51 13	-	Pyramid lake, mouth of Salmon Trout river.
	18	39 24 16	-	Camp on a river of the Sierra Nevada.
	19	39 19 21	-	Camp on a river of the Sierra Nevada.
	21	39 01 53	-	Camp on a river of the Sierra Nevada.
	22	38 49 54	-	Camp on a river, near a gap.
	23	38 36 19	-	Camp on a southern branch of stream of encampment of 22d to 23d.
	24	38 24 28	-	Head waters of a stream.
	26	38 18 01	-	Camp on a large stream.
	30	38 37 18	-	Camp on the same stream which we encamped upon on the night of the 18th to 19th January
Feb.	5	38 43 26	-	First camp in the pass of the Sierra Nevada.
	14, 19	38 41 57	120 25 57	The Long camp.
	24	38 46 58	120 34 20	Rio de los Americanos, (high in the mountain.)
Mar. 10, 22		38 34 42	-	NUOVA HELVETIA.

Campsites
in the
study area



Nobles' Route

The Nobles' Route was a cutoff from the Applegate-Lassen Route which made the journey west much easier in terms of distance and water supply. William Nobles first discovered the shortcut in 1851 while searching for gold in the Black Rock Desert area. Heading east from Honey Lake Valley, he hit Black Rock Point and realized he had discovered a shortcut to California. He returned to Shasta where he expounded on the virtues of this new cutoff. After a group of Shasta citizens crossed over the trail themselves in 1852 to verify Nobles' claims, Shasta residents raised \$2,000 to pay Nobles to divert emigrant travel along this new route and through their town. Nobles publicized the route and in 1852 the first emigrants passed along it. In 1856 the Nobles' Route was shortened by the discovery of the Hot Springs at Trego. Subsequently, wagon traffic went directly from Rabbit Hole Springs to the Hot Springs at Trego, and across the desert to Granite Springs, bypassing the long dry stretch between Rabbit Hole and Black Rock Springs entirely.

In 1854, Nobles approached Congress proposing that they approve funding for the development of his route into a good wagon road. Eventually, Congress did pass a bill granting \$300,000 for the improvement of this road (Amesbury 1967:113).

F.W. Landers was appointed superintendent of an expedition to improve the Nobles' Route as a segment of the Fort Kearny-South Pass-Honey Lake Wagon Road. From 1859 through 1860, Landers and his men mapped in the route, developed the road and dug out and expanded several of the springs. At Big Antelope Springs additional excavations and masonry were put in. At Rabbit Hole the water supply was tapped and a split-stone culvert was set in cement to carry the water to a reservoir of solid masonry which held 80,000 gallons. At Trego Hot Springs a large reservoir was built and water in the springs diverted so that it would cool in the process of running to the tank. At Buffalo Springs a 15 foot well was sunk (Jackson 1952:216).

The newly developed route superseded the Old California and Oregon Trails in the 1860s as an emigrant route with 1862 being the year of greatest usage (Helfrich 1971:13). In 1862 mining excitement broke out in Idaho. In order to transport passengers and goods from California, the Chico, California to Silver City, Idaho Wagon Route was opened incorporating portions of the Nobles'/Landers Route. This road went from Chico and Susanville through Deep Hole, Granite Creek, Soldier Meadows, Summit Lake, and on to Ruby City, Idaho. A weekly saddle-train carrying mail and passengers also traveled over this route. Parts of the route also connected with the Humboldt Range boom towns during the time of greatest mining activity (1860s and '70s)(Tingley, personal communication, July 28, 1977).

In 1867 the Central Pacific Railroad completed it's track nearly as far east as the "big bend" of the Humboldt, thus outdating the stage route. Subsequent use of the wagon road was minimal.

Route of Travel

The original Nobles' Route departed from the Applegate-Lassen Route at Black Rock and proceeded southwest across the desert to Granite Creek some three miles north of present-day Gerlach. Here the emigrants rested in the meadow and obtained water in a small canyon west of the meadow (Amesbury 1967:17). In the 1860s, Granite Creek functioned as a stage station due to it's location at the intersection of the Chico-Susanville to Idaho route and the route to Humboldt River country. In 1865 the station was the victim of Indian attacks. California volunteer troupes and U.S. Infantry moved in to protect the stages and Camp McKee was established. Basically, the camp was a tent city, but two major stone foundations still remain to mark the site of the Granite Creek Station (BLM Cultural Resource Site Records, HS 2). There is no trace of the trail between Granite Creek and Black Rock, but the route can be inferred because Nobles headed directly to Black Rock Point from Granite Creek.

The following is a quote from John A. Dreibelbis, who passed over the Nobles' Route several times in the summer and fall of 1853:

Black Rock Springs to Granite Creek, 22 miles.

"Course south of southwest; road excellent over a perfect desert, as smooth as a planed floor and nearly as hard, and not a vestige of vegetation on it for twenty-two miles. This stream comes out of a notch of the mountain range on the right hand, pretty well at the end. Leave the desert by turning into this gap half a mile to camp; bunch grass on the foot hills. It will be readily seen that between this point and Rabbithole, a material cut-off could be effected, so that forty-six miles might be made in thirty, with fully as good road, but no water; the cut-off, however, would be but six miles longer than from Black Rock to Rabbithole." (Howell-North 1857:327)

As suggested by Dreibelbis in the above passage, the route was shortened in 1856 by the establishment of a stopover at the newly discovered Trego Hot Springs. The present unimproved dirt road between Rabbit Hole Springs and Trego Hot Springs basically follows the course of the old Nobles' Route as does the present-day unimproved road which extends from Trego Hot Springs southwestward across the playa to the base of the Granite Range (Map 17). However, while the Nobles' Route went directly to Granite Creek Station the more recent road connects with the base of the Granite Range at point approximately one mile south of the site of the old stage station. Although modern vehicular use and annual rains (particularly in the playa area) have eradicated traces of the original trail, it is likely that an intensive survey along these portions of the Nobles' Route would yield finds of historic artifacts.

From Granite Creek, the trail went south along the base of the Granite Mountains to the Great Boiling Springs near present-day Gerlach. These springs were first mapped by Fremont in his 1844 expedition. Dreibelbis recorded this portion of the journey as follows:

"Hot Spring Point, 3 miles--Course south of southwest, road level, distance three miles; grass all along on the left; boiling springs scattered all through which makes it dangerous to let stock range upon it."
(Howell-North 1857:327-328)

At this point, the emigrants rounded the southern tip of the Granite Range and traveled northwest to Deep Hole Springs. A trading post was built here by Ladue Vary in 1856 and the original stone structure remains intact. Deep Hole also was plagued by problems with Indians during the 1860s. Amesbury recounts two of the grizzly slayings of white men (Amesbury 1967:21-22). Dreibelbis summarizes this portion of the journey as follows:

"Deep Springs, 7 miles, course northwest, road level. Here you double the extreme south end of mountain range; grass and water in abundance, of the very best quality; this is a good place to lie over a day or two."
(Howell-North 1857:328)

Amesbury maintains that the next stop for many of the travelers was Wall Springs (Figure 2) nine miles west of Deep Hole. Apparently, Dreibelbis did not utilize this spring as it is not included in his itinerary. According to Amesbury the army used this extensively in patrolling the trails for hostile Indians (Amesbury 1967:22).

The 1872-73 Historical Survey Plats (Maps 14-15; Appendix I) show two roads--one cutting across the playa and one curving along the base of the mountains basically following the course of the present road. Apparently the playa route is the original route used by Dreibelbis whereas the other is a later route developed to take advantage of Wall Springs.

The trail progressed from here to Buffalo Springs, which Amesbury says takes its name from nearby Buffalo Meadows, where area Indians claimed buffalo once roamed. In these meadows in 1864, Frank Murphy and "Comanche George" Lawrence started a salt works which produced salt from brine wells for farm stock and mining. The remains of the salt evaporation vats still can be seen in Buffalo Meadows (Amesbury 1967:22).

Dreibelbis's description of the route is as follows:

"Buffalo Springs, 16 miles, course west, road level. Directly after leaving the springs, you enter a desert; after passing eight miles over an arm of it, then eight miles through sage, you come to the bed of a large dry creek, its banks covered with dry grass for some distance; some water in holes that will do no injury to stock. One mile beyond this and about two hundred paces on the right hand are the Springs." (Hutchings 1857:328).

From here the trail continued south along the border of the Smoke Creek Desert, northwest up Smoke Creek and on into Honey Lake Valley. From Honey Lake the trail could be taken to Feather Lake where it met the Lassen Trail.

Personal consultations with Hunt, Helfrich, and Amesbury yielded their mutual judgement that Highway 81 from Gerlach to Buffalo Springs basically follows the path of the old Nobles' Route. They all seem to concur, also, that the trail probably was, in most cases, slightly south of the present route, down in the flats of the Smoke Creek Desert, rather than in more rugged sage-brushed terrain to the north. None of them have seen traces of the road from the air. However, the watering holes are still in existence. Also, the Landers survey party from '57 to '59 made thorough notes and maps of the trail as it existed in their preliminary survey and as they developed it. Journalists descriptions of this route apparently are scarce. Dreibelbis' account is the only well known one, though an intensive literature search probably would reveal a few among the thousands of handwritten, unpublished journals in private collections and public archives. From the records of the Landers party and Dreibelbis and the existence of known watering holes, the trail in this area can very accurately be inferred.

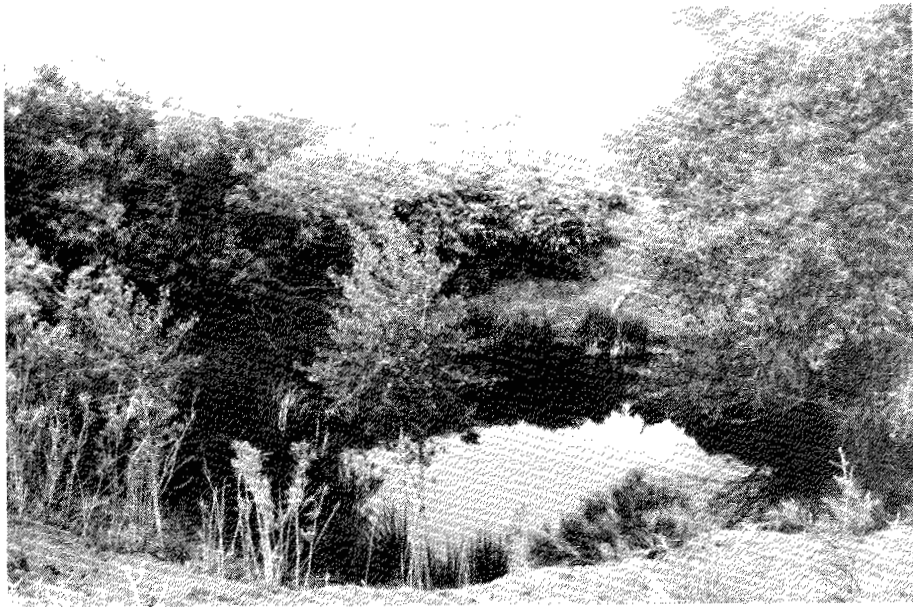
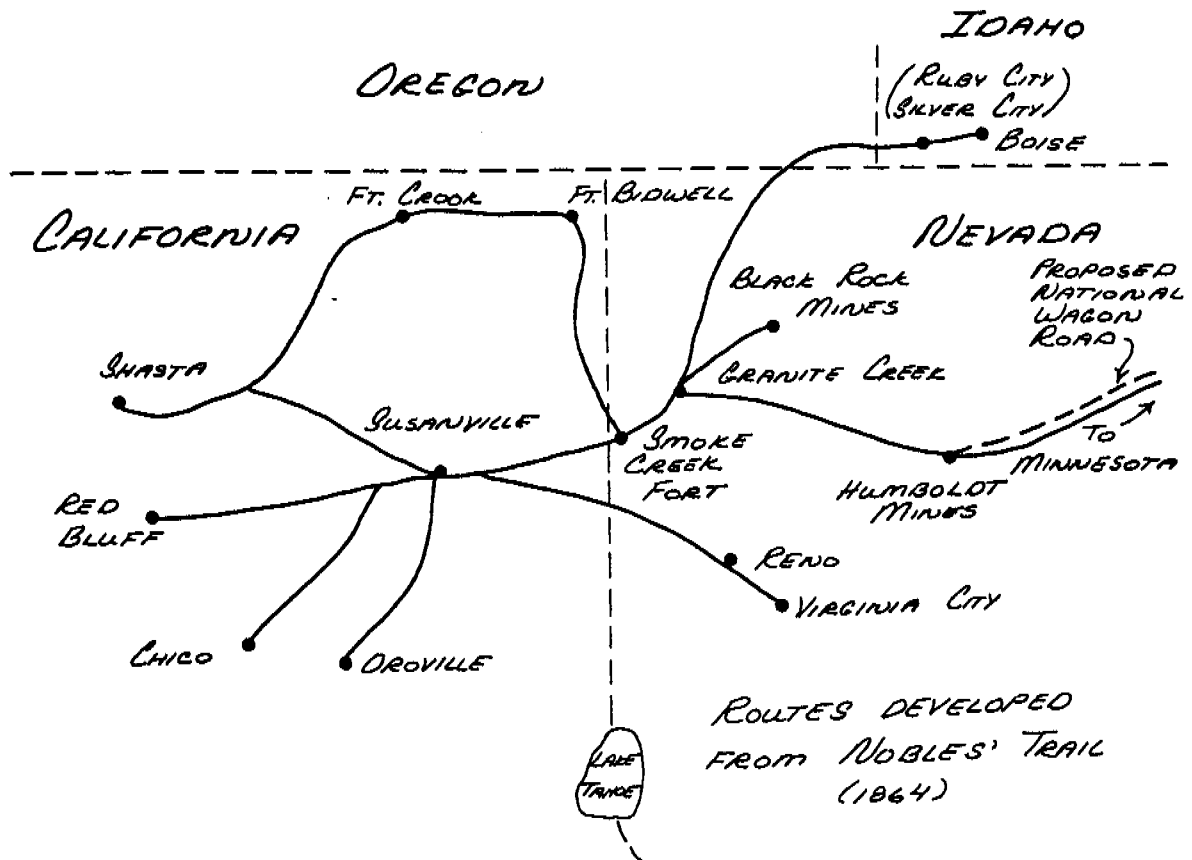


Figure 2. Wall Springs

Watering hole and campsite in Smoke Creek Desert
used by some travelers of the Nobles' Route.

MAP 2



Later stage, freight, and mail routes developed from Nobles' Route (Amesbury 1976:2).

Applegate-Lassen Trail

In 1846 Jesse and Lindsay Applegate set out with a party of 13 men from La Creole, Oregon, intent on opening a southern route into the Willamette Valley. The primary purpose of this route was to provide an avenue of escape for American colonists and a route by which troops and supplies could be safely transported into the Oregon Territory should the ongoing disagreement over possession of the colony result in war with Great Britain. Secondly, it was hoped that the route would provide an alternative course for westward migrating pioneers who previously had been restricted to the frequently treacherous Oregon Trail.

Guided by Fremont's excellent maps and reports, a map by Peter Skene Ogden, and information obtained from Hudson's Bay Company, the Applegate party opened a trail which left the California Trail at the "Great Bend" of the Humboldt River (near present-day Imlay, Nevada) and headed northwest through the Black Rock Desert into Oregon (Helfrich 1971:2). Though the trail was never used for military purposes, the question of possession of the Oregon Territory having been settled peacefully, it did serve as the main alternate route to the Oregon Trail for Oregon-bound emigrants from 1846 through the 1850s with 1849 being the year of its greatest usage.

In 1848 Peter Lassen opened a cutoff from the Applegate Trail which extended south from Goose Lake in northeast California through his trading post (near present-day Chico) and onto the California goldfields. Realizing the potential profit his trading post stood to make, Lassen somewhat inaccurately advertised the cutoff as a shortcut to the goldfields. Following his advice, nearly half of the 1849 gold seekers (15,000 to 20,000 people) traveled the Applegate-Lassen Trail to California (Hunt 1975:2).

Jesse Applegate had not anticipated that his cutoff would ever receive such heavy use and the trail was not really designed to handle such a volume of traffic as Peter Lassen and the gold rush caused it to receive. Applegate had allowed for at least one watering spot a day and his "Waybill from Fort Hall to the Willamette Valley" (Table 2) gave specific instructions as to their proper usage. He suggested that an advance party precede the train and excavate wells in the spring areas so that there would be adequate water for men, teams, and cattle upon their arrival. The emigrants, however, paid this advice no heed and as a consequence, the long awaited watering holes frequently were mere muddy quagmires littered with the bodies of dead and dying animals. This scarcity of water transformed the passage over the trail into a nightmarish journey and its hardships were broadcast widely. As a consequence, the trail received little use by California-bound emigrants after 1849, though Oregon-bound settlers used it well into the 1850s.

Table 2. Mileage between campsites as estimated by emigrants. from Bruff's "Cherokee Guide" (1849, Appendix VIII, pg. 1210) adapted from Applegate's "Waybill".

Oregon road here leaves it, and runs on a W. course towards a gap in the mountains.

(Riv to Gap) Springs in the Pass — ($\frac{1}{2}$ m. to left of road.)	12 m
Rabbit Hole Springs (15)	13 "
Black Rock 7 m. beyond B.	
Rock B valley spg.	20 "
(20 m. to Mud Lake) (25)	(69 m)

From Ogden's R. to Black Rock, is known as "*the dry stretch*" and to perform the journey in safety, emigrants should send an advance party on 2 or 3 days ahead, to dig out large tanks for the water at the springs, which will supply their animals. At the 1st. spg. is some grass, at the 2d little or none, but at Black Rock probably plenty.

Emigrants should encamp at the 1st Spg's, & perform the journey there to the Rock in the next day & night. The loose animals should be driven ahead as fast as possible until they reach the Rock, & not suffered to drink at the second springs as the water should be all reserved for the teams. Care should be taken to prevent the loose animals from leaving the road during the night travel, as many have been lost by neglecting this precaution.

From the Rabbit Hole Springs, Black Rock is in sight in a N.W. direction across a level plain; it is the S. end of a range of naked burnt mountains, and all the water near is most boiling hot. About 5 m. S. of the Rabbit Hole Spgs. a hot spg. & plain of grass is: if the road passed that way it would be longer, but a night's drive would be avoided; — worth examination.

Last Hot Spring	5 m.
Salt Valley	20 "
1st. Camp, in High Rock Cañon	10 "
Up H. Rock Cañon	20 "

The H. Rock C. is a great natural curiosity, a good road, handsome little meadows, excellent water, enclosed by beetling cliffs, rising in places hundreds of feet perpendicular.

Little Mountain Pass	18
----------------------	----

4 m. from the last water of high Rock Ck. to a good camp at a running brook, 2 m. further there are springs left on the road, fine grass & water at the Pass, on both sides of the ridge

Warm Springs	12 m.
--------------	-------

Summit of Sierra Nevada	18 m.
-------------------------	-------

Plenty of grass, & water all along the mountain sides of pass, within $\frac{1}{2}$ m. of the Summit.

Keep close watch here — Indians mischievous. Emigrants to Cal. turn short to left & avoid a horrible pass —

Lassen Meadows to Antelope Springs

The first segment of the Applegate-Lassen Trail runs from the cutoff at the northern end of present-day Rye Patch Reservoir northwest to Willow Springs and on to three springs jointly referred to as the Antelope Springs on the northern slope of Majuba Mountain. In trail days a main camp spot on the California Trail was a large grassy meadow called Lassen's Meadows (Figure 3) located at the "Big Bend" of the Humboldt River. In 1935 and 1936 Rye Patch Dam was constructed and the resulting reservoir flooded much of the meadow campsite and portions of the trail in this area. However, the point where the Applegate-Lassen Trail left the California Trail is still visible today and has been marked with one of the yellow railroad rail trail markers of the trail marking organization, Trails West. It is posted in T. 33 N., R. 32 E., Section 26 (Pershing Co. NV. USGS) and may be reached by following the road to Sulphur five miles west from Callahan Bridge (NW of Imlay) turning left, following this road 1/2 mile, turning left onto another dirt trail and following this to the trail marker. Here one can see where the California Trail continued south down the Humboldt to the Carson Sink and where the Applegate-Lassen went northwest across the plain.

From the cutoff, the emigrants proceeded about nine miles in a north-westerly direction to Willow Spring (Figure 13), traveling in the trough of a gulch for the last mile and one-half (Helfrich 1971:22).

Bill James of Humboldt Station, Nevada, pointed out traces of the trail in this area. At the junction of the main road to Sulphur and the road going north to Jungo and south to Rye Patch traces of the trail can be seen to the left of the Sulphur Road a short distance from the junction and on either side of the Jungo Road, cutting northwest (Figure 12). Water has coursed through this trail trace but it is clearly visible (James, personal communication, April 14, 1977).

Between Rye Patch and the Sulphur/Jungo junction, the trail can be distinguished from the air (Figures 6 and 7). A ground check of a portion of this trail approximately one mile from the cutoff revealed that trail ruts in this sage plain area have been largely obliterated by the effects of weathering and ORV traffic. Bits of rusted metal and some bone fragments were found in the 1/2 mile surveyed. According to Bill James, in the early days of his trapping, this portion of the trail, as well as the rest of it, was well marked with parts of broken wagons, grave markers, animal bones, and various articles discarded by the emigrants to lighten the loads of their ever-weakening oxen. Since then, most of the trail artifacts have been collected by curio-hunters and scant evidence in terms of artifacts is to be found except for bits of rusted metal and bone fragments.

From Willow Spring, the emigrants traveled up a gulch a few miles. Trail traces are to the north of the present-day road. From here they turned south from the main road and ascended Majuba Mountain to water at any of the three springs which were located from 1/2 to 3/4 mile up the

slope (Helfrich 1971:22). Some of the emigrants bypassed Willow Springs and went directly to the Antelope Springs. Often in 1849 the springs were clogged with wagons, people, and animals. Long lines led up to the springs and some discouraged emigrants pushed on to Rabbit Hole Springs without obtaining water.

A reminder of a trail tragedy can be seen at the main Antelope Springs (Figure 14). This is the broken granite headstone (Figure 15) marking the grave of Susan Coon, wife of a wagon master, who died in childbirth here in 1860. The son she bore survived and was raised by two pioneer ladies. Seventy-two years later, he came to Imlay to search for his mother's gravestone. Bill James had discovered the gravestone in his trapping expeditions and was able to lead the man to his birthsite (James, April 14, 1977).

Also at Antelope is a stone slab set in the ground marking the spot where two prospectors were massacred by Indians. Presumably, their bodies were buried here also.

In Gold Rush, Bruff illustrated Haystack Butte, a landmark that guide-books advised emigrants to search for in the center of the plain to the north as a marker of the cutoff (Figures 8-9). Also, he illustrated Majuba Mountain and the trail swinging around it through the "gap" for which they were aiming (Figures 10-11). The trail from the cutoff to the Antelope Springs is plotted on the 1863 historical survey plats (Maps 3-5, Appendix I) and is easily discernable from the air.

The following are excerpts from journals describing this portion of the trail:

Goldsborough Bruff

September 19, 1849

"A broad and perfectly level semi-circular area, very dusty, sweeps around the bend--and the two trails, or roads, are broad and as well beaten as any travelled thoroughfare can be. On the right, about a hundred yards from the Bend, the Desert route branches off, and in the fork of the road, I observed a red painted barrel standing . . . and neatly painted in black block letters, upon it, "POST OFFICE". . . .

The area here, of white earth, extends to the N.W. about 3/4 mile, bounded, on the left, by an elevated plain, and long spurs and bluffs of sand The first 4 miles was over a plain as level as a marble tablet, and nearly as smooth; firm where not cut into by the travel, white, and sun-cracked We now are gradually ascending, and have to pass over a more irregular plain, of a reddish clay, and numerous small stones, with scattered dusty sage bushes The trail follows up one of these dry conduits, along a sandy pebbly bed Late in the afternoon, the ravine-road we

travelled on,--pent up in lofty sterile mountains,--mostly naked dark rocks, turn abruptly to the S.W. and became more contracted & rugged,--along the bed of what is, in the wet season, a torrent,--leading to indentations in the mountains where are springs [Antelope Springs] About 3/4 m. from the springs, the main trail, ascends a considerable gravel bank, leaving here the broad pebbly stream bed, for a high plain There are 3 spring places here, in this mountain-dell--a few hundred yards apart;--the centre one 3/4, and the flankers about 1/2 mile from road on plateau." (p. 144-6 1949 edition)

Alonzo Delano, Across the Plains and Among the Diggings

August 15, 1849

"We left the Humbolt sixty-five miles above, where it disappears in the sands [Humboldt Sink] continuing down its valley for two hundred and thirty-five miles. A lateral valley led far to the north, and in the middle, towards the northern boundary, tall, irregular buttes arose [Jackson Mountains], while high mountains were on each side. Our course was in a northwest direction, across the plain, towards a gorge, through which the road ran At the distance of ten miles we entered a gorge It was eleven o'clock before Mr. Fredenberg and I reached the springs [Antelope Springs] which were a mile off the road Distance 12 miles."

E. P. Howell, Crossing the Plains

August 23, 1849

"Started early and came to forks of road. Took right hand, leading nearly due west to a gap in the mountain. A valley extending up toward the North in the midst of which across a haystack looking mound [Haystack Butte]. The river and old road [California Trail] bore off S.W. . . . We came ten miles to a patch of bushes on the right of the road, where we found a little bad water in a rabbit hole [Willow Spring], two or three miles further came to a road turning off on the left to several weak springs [Antelope Springs] on the mountain side about a mile from the road. Water tolerably passable."

Titus Hale, Diary of Trip to California in 1849

August 22, 1849

"This morning we took the cut-off, if it is one. It takes off at a point where the Humboldt runs south and the cut-off runs a west course to a gap in the mountain. It starts in a valley and extends rather north, and several miles from the road is seen a round mound [Haystack Butte] that appears to be in or near the center of the valley and is eight or ten miles, I should think, from the Humboldt River. By that mound, the bend in the river etc., the cut-off may be known. We drove through sage about eight or nine miles and then took into the gap, or pass in the mountain and after driving in the pass about four miles came to or opposite three springs [Antelope Springs] on our left, but there was so many teams ahead of us we could get no chance to water our cattle."

Kimball Webster, The Gold Seekers of '49

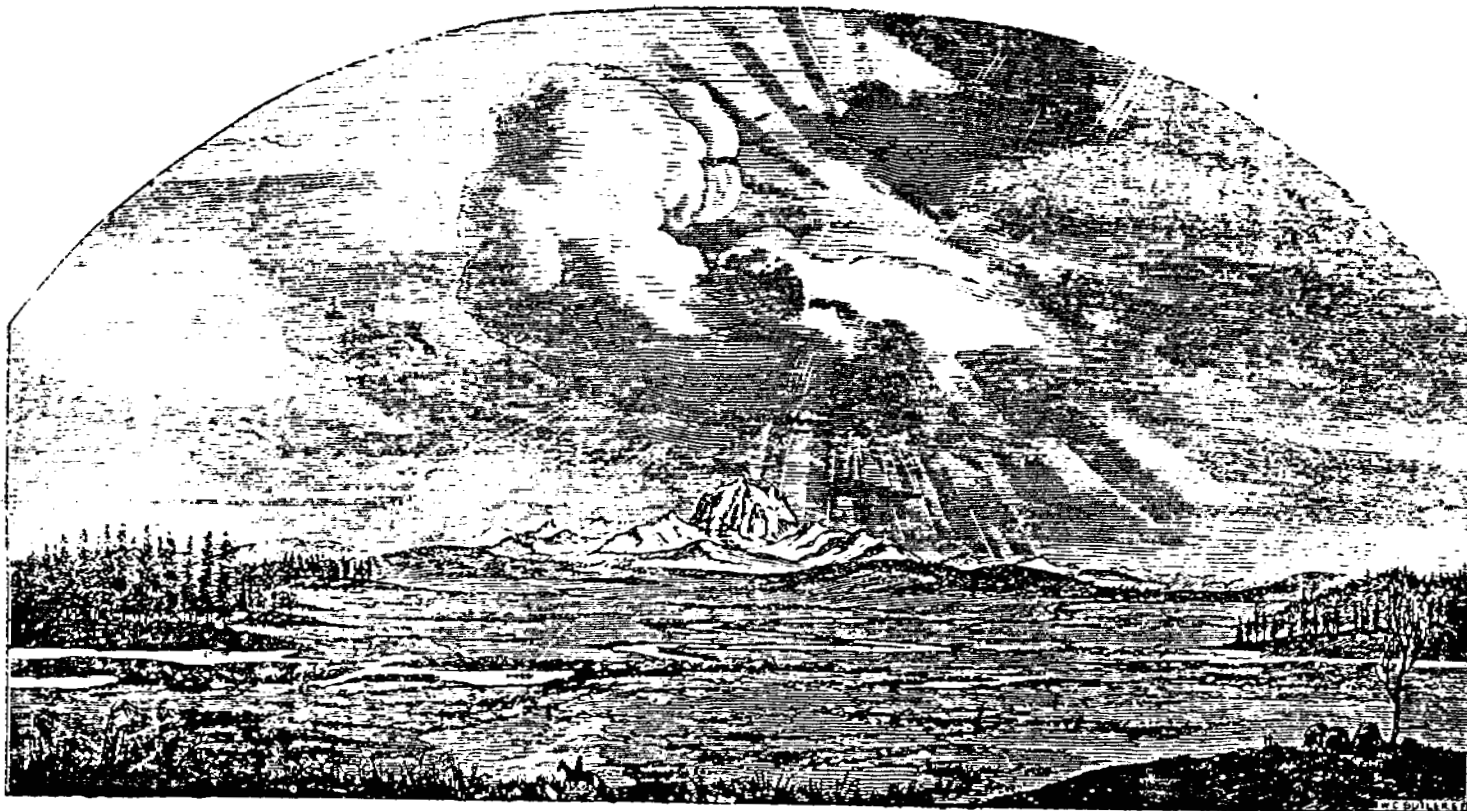
Friday, September 14, 1849

"The "Cut-off" leaves the Humboldt River at a bend, where it curves more southerly . . . , and crosses a desert plain, very barren and slightly undulating, in a westerly direction We traveled 14 miles after leaving the river before we found water. At that place we found a spring [Antelope Springs]"

Ananias Pond

August 24, 1849

"We were now some 50 miles above the Sink We drove 12 miles across the desert to where we expected to find a spring. We found a hole had been dug which contained less than 2 qts. of water [Willow Spring] Four miles farther on we found a spring to the left of the road 1 mile pretty high up on the mountain [Antelope Springs]."



LASSEN'S BUTTE, FROM LASSEN'S MEADOWS, AND WEST END OF NOBLE'S PASS.

Figure 3. Lassen's Meadows as illustrated in "A Jaunt to Honey Lake", Hutchings California Magazine, 1857 (Olmsted 1962: 322).

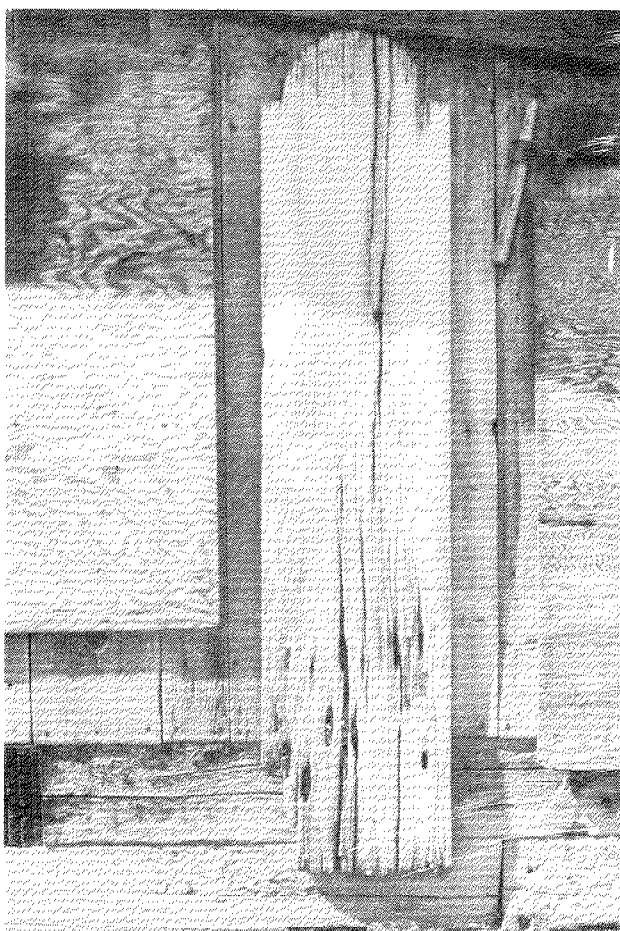


Figure 4. Emigrant wagon sideboard that was fashioned into a grave marker. Found by Bill James near Callahan Bridge and mounted on his barn at Humboldt Station, Nevada.



Figure 5. California Trail on north side of Humboldt River at Callahan Bridge.

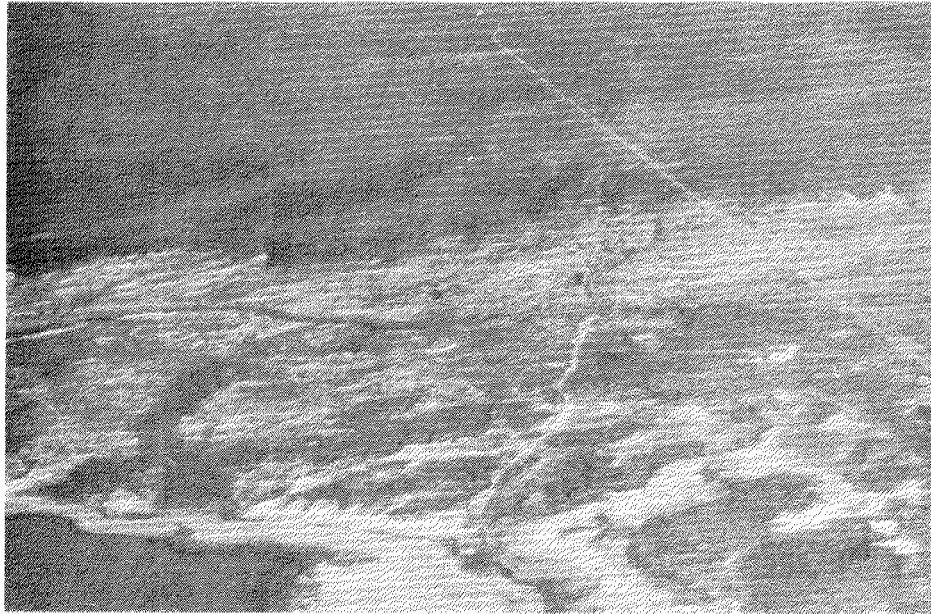


Figure 6. Aerial view of Applegate-Lassen cutoff from California Trail near Rye Patch Reservoir.

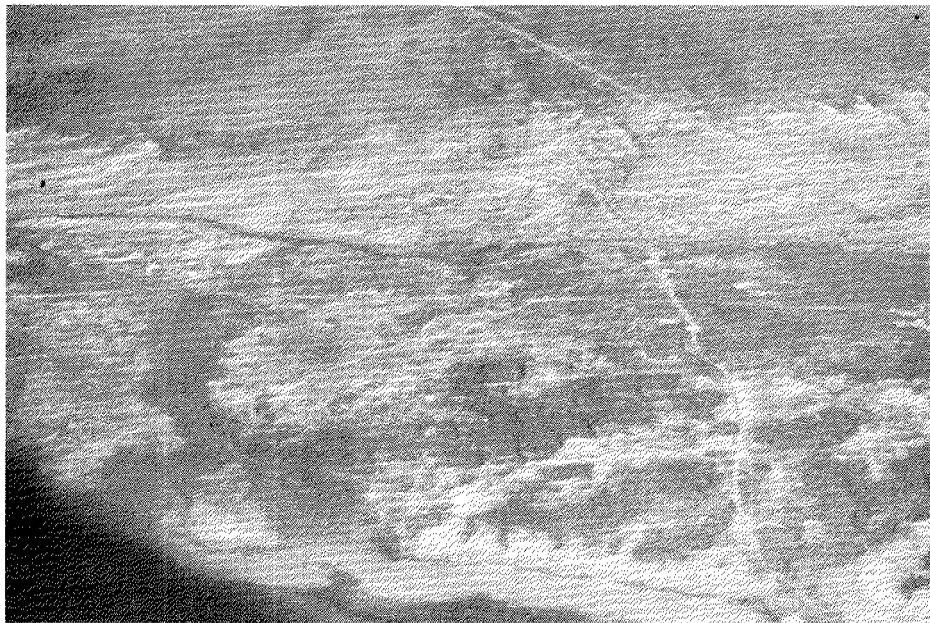


Figure 7. Applegate-Lassen Trail at the cutoff from the California Trail. Trail is diagonal track leaving shore of Humboldt and meeting main road at Jungo Road junction.

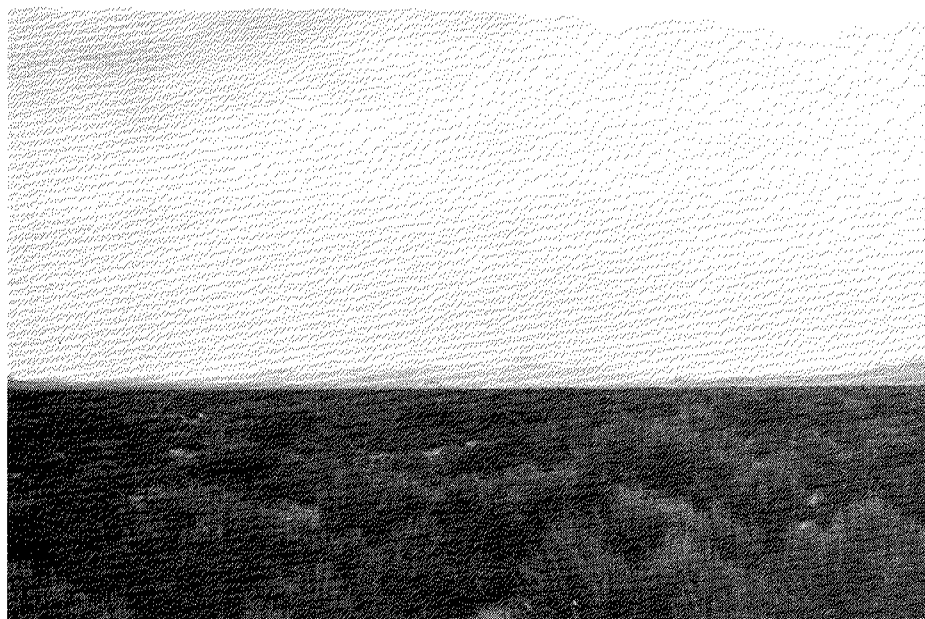


Figure 8. Looking northwest from the cutoff, Haystack Butte can be seen faintly in the distance in the center of the plain against the backdrop of the Jacksons.

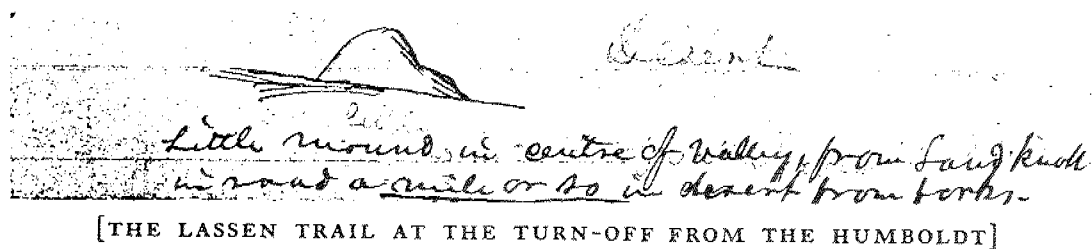


Figure 9. Bruff's illustration of Haystack Butte which was a marker of the cutoff for the emigrants.

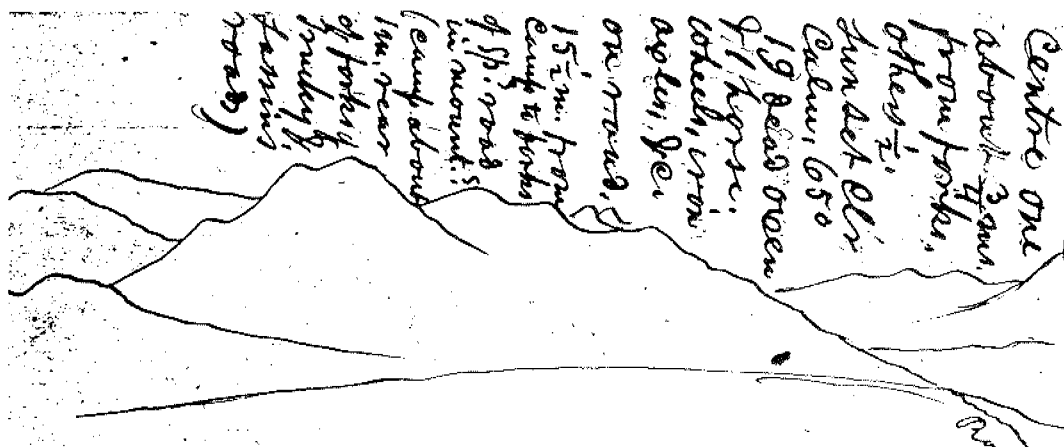


Figure 10. Bruff's illustration of Majuba Mountain and trail passing through "gap."



Figure 11. Photograph of Majuba Mountain shooting west from the cutoff. Matches up very well with Bruff's silhouette.

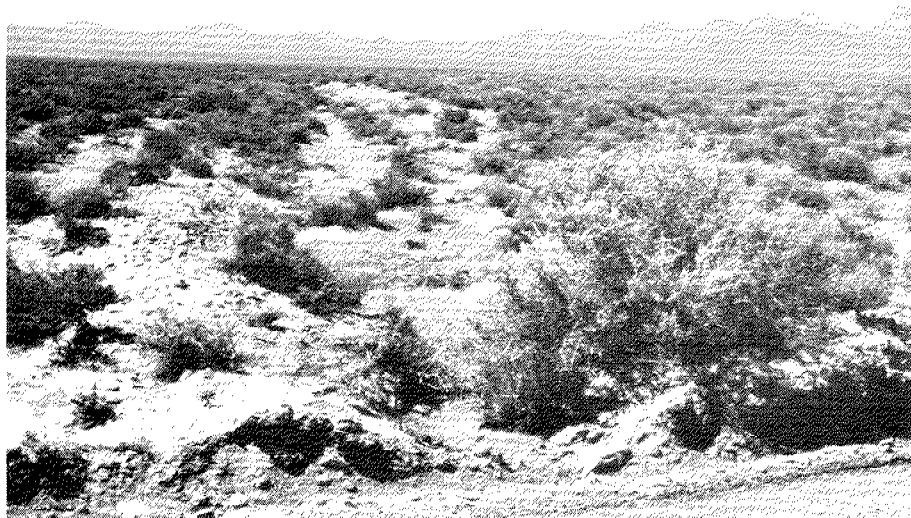


Figure 12. Trail trace cutting northwest across junction of Sulphur and Jungo Roads.

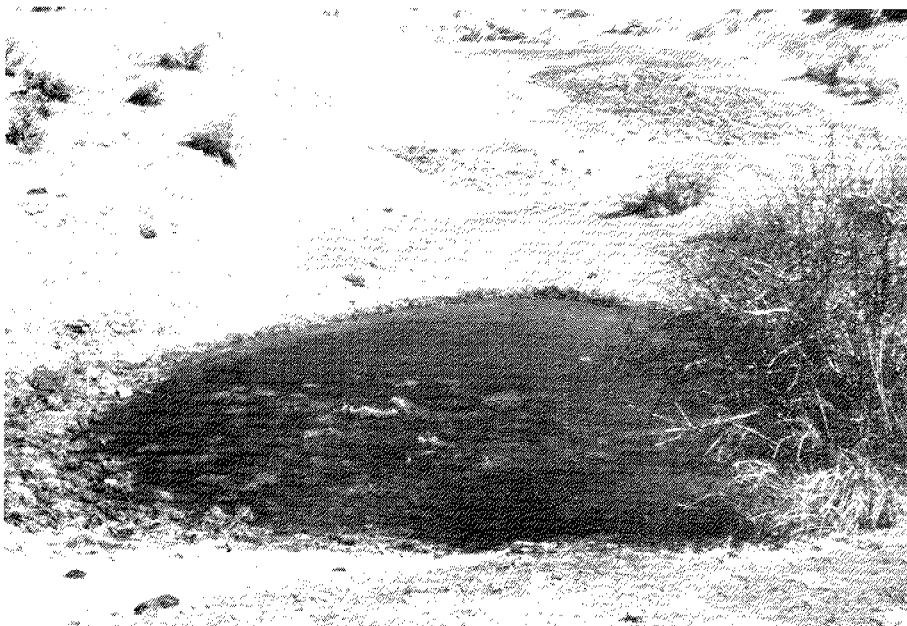


Figure 13. Willow Spring.



Figure 14. Main Antelope Springs as developed by Lander's survey party in 1860.

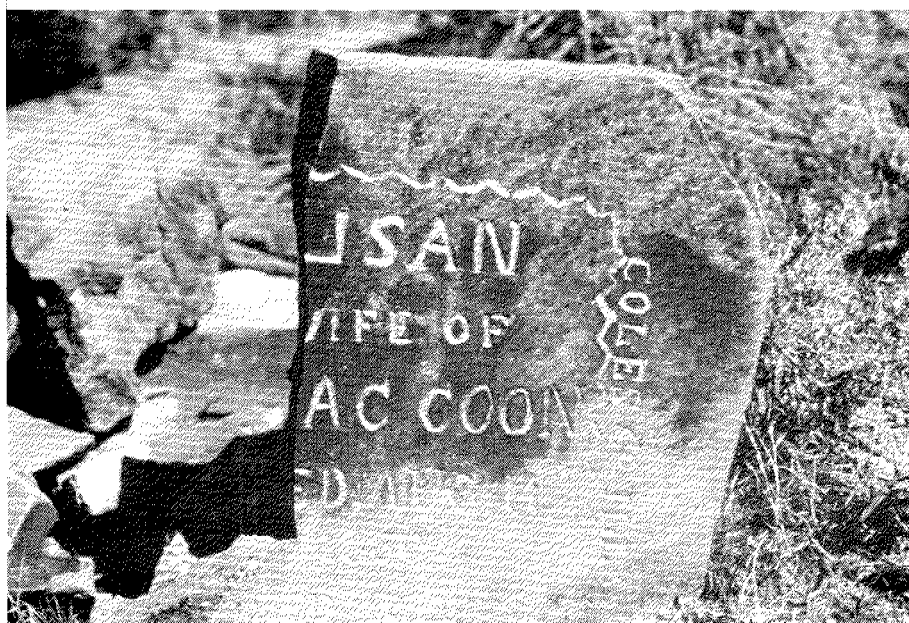


Figure 15. Gravestone of Susan Coon at main Antelope Springs.

Antelope Springs To Rabbit Hole Springs

The next campsite for the emigrants after watering and feeding their animals at the Antelope Springs, was Rabbit Hole Springs (Figure 17-18). There has been some dispute over the exact location of this route. For years it was assumed that the emigrants passed through Rosebud Canyon (Figure 16) enroute to Rabbit Hole. Through careful examination of formerly unconsulted journals, however, Devere Helfrich has concluded that the emigrants instead arrived at Rabbit Hole Springs by way of the pass through the Kamma Mountains just south of Rosebud Canyon. This route would have taken them up a ravine and over the southern end of the Antelope Range at Emigrant Pass approximately 4-1/2 miles southwest of Willow Spring. From here he maintains that they went northwest across a broad sage plain which slopes to the southwest and on through the pass south of Rosebud to Rabbit Hole Springs. The other route goes northwest from Willow Springs over Imlay Summit in the Antelope Range past Maud's Well and through Rosebud Canyon to Rabbit Hole Springs. Helfrich suggests that this latter route was blazed by Landers in 1860 and used later by traffic from Redding and Chico, California, to the mines in the Humboldt Range.

Thomas Hunt concurred with Helfrich's theory but believes that later emigrants may have used the Rosebud Canyon Route. Most of the original Kamma Mountain Route is plotted on early survey plats (Maps 5-6) and is clearly visible from the air. Traces of the Rosebud Canyon Route can be seen on the south side of the present road at Imlay Summit.

The following are diarist descriptions of the trail between Antelope Springs and Rabbit Hole Springs:

Alonzo Delano

August 16, 1849

"It was now twenty miles or more to Rabbit Springs, the next water We pursued our way in a northwest direction up the gorge to the ridge [Antelope Range] and then followed down another ravine."

E. P. Howell

August 23, 1849

"We watered our stock with some difficulty and continued up the hollow 3 miles to the gap of the mountain [Emigrant Pass] We went on down a dusty hollow bearing N.W. and N. over undulating hills until we come at 1 o'clock in the morning to some wells of very bad water [Rabbit Hole Springs]. We have travelled about 35 miles since morning--15 to springs and 20 to wells."

Israel F. Hale

August 22, 1849

"We rested about an hour and started for Rabbit Hole Spring, said by some to be thirteen and by others sixteen miles from the springs in the pass. We arrived at what we supposed to be the spring about ten o'clock at night, but we could not get water there but drove about two miles further where we found some wells that had been dug by the emigrants to get water for stock, etc."

George Keller

September 15, 1849

"We started this morning at 5:30 o'clock and travelled 19 miles across a barren undulating desert, when we came to a place known as the Rabbit Wells, where four or five wells, some 8 or 10 feet deep have been excavated by the immigrants in advance for the purpose of obtaining water for themselves and their stock. These wells with one or two exceptions were filled with dead animals. Having seen water at the bottom and being so eager to obtain it, they rushed head first into them, where they perished and could not well be extricated."



Figure 16. Rosebud Canyon. Present road probably developed by Lander in 1860 and possibly used as an alternate route to Rabbit Hole by emigrants.

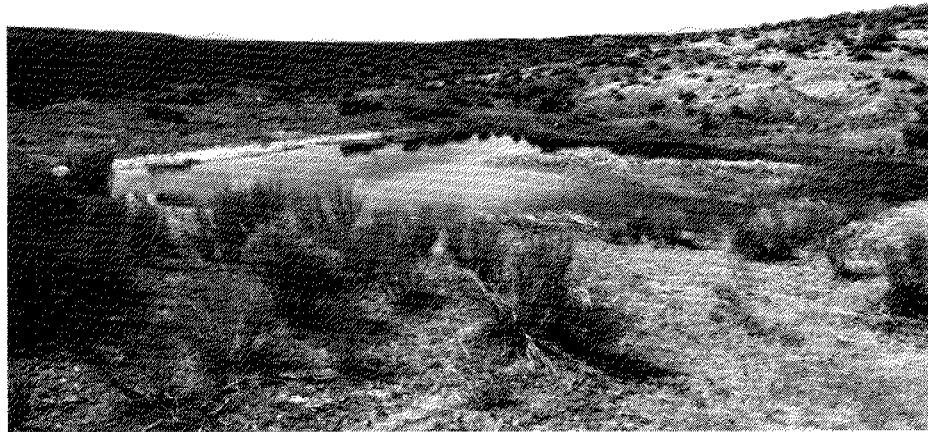


Figure 17. Rabbit Hole Springs as developed by Lander in 1860.

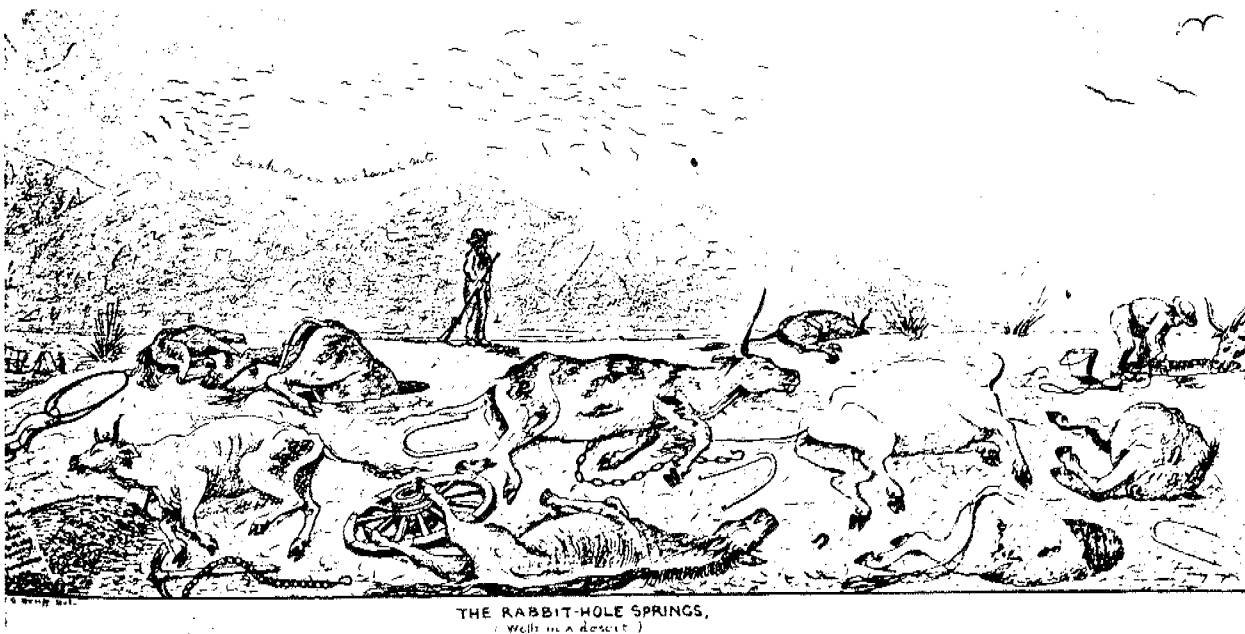


Figure 18. Rabbit Hole Springs in trail days littered with the carcasses of oxen who perished from thirst and starvation.
(Illustration by Bruff)

Rabbit Hole Springs To Black Rock Springs

In terms of actual physical evidence, the portion of the trail between Rabbit Hole Springs and Black Rock Springs is the most clearly marked segment. From Rabbit Hole the emigrants had a clear view of Black Rock to the northwest and headed in as direct a line as possible for the distinctive volcanic butte which is the southernmost point on the north and south extending Black Rock Range (Figures 19 and 21). In 1846, Jesse Applegate's party blazed this portion of the trail. Having followed Fremont's route of 1843-44 from High Rock Canyon to Black Rock Springs, the party was desirous of locating a route between Black Rock and the Humboldt River, intending to connect with the California Trail at that point. The trail blazers split into two groups with Jesse Applegate's party heading southeast toward a "notch in the mountains." Passing through this notch they came upon many rabbit trails leading to the springs which they consequently christened "Rabbit Hole Springs" (Thomas Hunt, personal communication, July 15, 1977; and Applegate 1921).

Lindsay Applegate describes the discovery of Rabbit Hole in the following excerpt:

"After traveling about fifteen miles (eastward from Black Rock) we began to discover dim rabbit trails running in the same direction in which we were traveling. As we advanced the trails became more plain, and there were others constantly coming in, all pointing in the general direction toward a ledge of granite boulders which we could see before us. Approaching, . . . we could see a green mound where all the trails seemed to enter, and on examining the place closely we found a small hole in the top of the mound, in which a little puddle of water stood within a few inches of the surface Digging down in this clay we made a basin large enough to hold several gallons and by dark we had quite a supply of good pure water Great numbers of rabbits came around us and we killed all we wanted of them. This is the place always since known as Rabbit Hole Springs." (Applegate 1921:31-32)

The trail from Rabbit Hole to Black Rock was probably the cruellest segment of the journey for the Applegate-Lassen Trail travelers. It was a waterless 22 mile stretch across a rugged sage plain and the unvegetated Black Rock Desert. Most of the emigrants embarked on this portion in August and September as it was necessary to arrive at the Sierras before the snows made the mountains impassable. Without the merest hillock or bush for shade, the heat was blistering and unmerciful. Some trains resorted to taking their bearings by the stars and traveling the route by moonlight. Others somehow withstood the heat and trudged their way

across the barren alkali plain of the Black Rock Desert in the daylight hours. Either way, the price they paid was dear. Thousands of cattle and oxen died along the route due to the effects of the intense heat and the lack of water. Wagons bogged down in the soft sand and personal belongings were thrown out to lighten the load and ease the burden on the already overtaxed oxen. Finally, they rounded Black Rock (Figures 32-34) and going north one-quarter mile they camped gratefully at Black Rock Springs (Figures 35-38). Here they dug wells for the animals to drink from and boiled their coffee and cooked their meat in the hot water of Black Rock Springs.

Periodically, water flows in the bed of the Quinn River which the emigrants crossed enroute to Black Rock Springs. However, generally in the summer months it is in a dessicated state (Figures 24-26). Presumably the Quinn River was not flowing during the summer of 1849 when the emigrants traversed its bed as no reference to it is made in any of the journals that were studied.

The following are journalist descriptions of this portion of the journey:

Alonzo Delano

August 16, 1849

"We came to the determination that we would wait till near sunset, as the cattle could travel better without water in the night than by daylight. . . . We started about six o'clock, with anxious hearts and sad forebodings on our perilous journey. We were on a level plain of ashy earth, where nothing grew but a few stunted sage and greasewood bushes, with barren mountains shading the horizon in the distance on the north and south"

August 17, 1849

"As I walked on slowly and with effort, I encountered a great many animals, perishing for want of food and water, on the desert plain. Some would be gasping for breath, others unable to stand, would issue low moans as I came up, in a most distressing manner, showing intense agony; and still others, unable to walk, seemed to brace themselves up on their legs to prevent falling, while here and there a poor ox, or horse, just able to drag himself along, would stagger towards me with a low sound as if begging for a drop of water. My sympathies were excited at their sufferings, yet, instead of affording them aid, I was a subject for relief myself.

High above the plain, in the direction of our road, a black, bare mountain [Black Rock] reared its head, at the distance of fifteen miles; and ten miles this side of the plain [Black Rock Desert] was flat, composed of baked earth, without a sign of vegetation, and in many places covered with incrustations of salt. Pits had been sunk in moist places, but the water was salt as brine and utterly useless

The train had passed me in the night, and our cattle traveled steadily without faltering, reaching the spring [Black Rock Spring] about nine o'clock in the morning, after covering nearly forty hours without food or water We found this to be an oasis in the desert. A large hot spring [Black Rock Spring], nearly three rods in diameter, and very deep, irrigated about twenty acres of ground--the water cooling as it ran off. But we found the grass nearly consumed, and our cattle could barely pick enough to sustain life. The water in the spring was too hot for the hand; but around it there was formed a natural basin, with the water sufficiently cool to bathe in, and I, with many others, availed myself of the opportunity to take a thorough renovation, which we found exceedingly refreshing A little above the spring was the mountain [Black Rock] which we had seen from the plain, a bare pile of rock, that looked like a mass of black cinders, while at its base were fragments of lava and cinders, which resembled those of a blacksmith's forge. Desolation reigned around in the fullest extent. The desert and the mountain were all the eye could view beyond the little patch of grass, and the naked salt plain which we had crossed, proved to be the dry bed of Mud Lake [Fremont's name for the Black Rock Desert]."

E. P. Howell

August 24, 1849

"We started at about 8 A.M. having a stretch of 25 miles before us to water. Our cattle have not had a mouthful of grass since leaving Mary's [Humboldt] River nor shall we find any until we arrive at the Black Rock boiling spring where we intend going this night."

Along here, several wagons and some valuable property is being abandoned on account of failing teams those having horses packing what they could, and such as have none carrying what provisions they can and footing it ahead . . . Our course bore nearly North and after getting out of the hollow and taking a sage or greasewood plain, it bore West northwest. After traveling 16 or 17 miles . . . we came to a perfect plane [the Black Rock Desert] leading N.E. and S.E. without any vegetation whatever. It looked very much like it had been the bottom of a lake except that it wanted banks. We were travelling toward the left hand pointing of a mountain [Black Rock] after passing around which and bearing up north we came to the long wished for spring [Black Rock Spring] and grass about 8 or 9 o'clock at night We had come 60 miles from Mary's [Humboldt] River and one along the river without any grass whatever. During the last of this day's drive we passed great numbers of dead cattle; and many still alive that had given out. This spring [Black Rock Spring] is a large boiling spring, having been sounded 250 feet without bottom The earth is everywhere covered with a salt alkaline crust and in all the well of water; the water is quite brackish. The hot spring water when cooled is best."

Israel Hale

August 22, 1849

"We arrived at these wells [Rabbit Hole] . . . and remained until three in the morning when we started and drove about eight miles It was nine o'clock before we got a start We reached the Salt Plain [Black Rock Desert] about eleven o'clock and a very warm morning This plain is from six to eight miles wide. It is covered with a whitish crust and entirely void of vegetation of any kind As we came near the edge we came in among a lot of mounds [hummocks near Black Rock] from six to ten or twelve feet high. They were from thirty to one hundred feet apart and extended as far as my eye could see. They covered hundreds of acres. We then came up a small hill and soon were opposite Black Rock. The spring [Black Rock] is one-quarter of a mile from the rock. It is on high ground and runs into a basin from four to six rods square and then runs down a hill. The water is hot as it comes out of the spring, but that on the opposite side of the basin is sufficiently cool for oxen to drink without doing them any injury. The spring takes its name from the color of the large rocks near them. They were doubtless blackened by some volcanic eruptions. We encamped in the flat below the

spring with poor grass and no wood, but any quantity of hot water. We are now fairly into the cut-off and through what is called the dry stretch . . . from Humboldt to the rock The number of cattle lost in this dry stretch within ten days past will exceed two hundred largely, for the road has only been traveled ten days and one hundred and fifty head are now lying dead in sight of the road and between the Humboldt and Black Rock Springs."

Kimball Webster

September 15, 1849

"We started in the afternoon and at about sunset came in sight of Black Rock [Spring], which was then about nine miles distant across a level, barren Plain [Black Rock Desert]. When within about six miles of Black Rock one of the mules which I was driving became so exhausted that he refused to go any farther and I was obliged to unpack and leave him with the pack by the roadside; after which I reached Black Rock at about eleven o'clock at night"

September 16, 1849

"The country over which we made forty miles yesterday is known as the Black Rock Desert, and the road is literally strewn with dead animals--cattle, horses and mules. The stench of these dead and decaying carcasses contributes largely to render the traveling still more disagreeable than it would otherwise be.

The Black Rock Spring, so-called, is a spring several feet in diameter, out of which the water is continually boiling at or near a boiling point. The water may be drank after being cooled sufficiently, but is not very good water."

Jess Quinn Thornton

Chapter X, Journey from Ogden's River to Black Rock Oregon and California in 1849, p. 179.

". . . Just as the sun was sinking, we resumed our journey, and after descending a little hill we entered a country more forbidding and repulsive than even that I have described Nothing presented itself to the eye, but a broad expanse of a uniform dead-level plain [Black Rock Desert], which conveyed

to the mind the idea that it had been the muddy and sandy bottom of a former lake; . . . It seemed to be the River of Death dried up, and having its muddy bottom jetted into cones [sand hummocks] by the force of the fires of perdition . . . a wide waste of desolation where even the winds had died. It was a wearisome, dull, and melancholy scene, that had been cheered by the beauty of no verdure since the waters of the flood had subsided At length, about half an hour before daylight, in the morning, myself, and four others, arrived at the Black Rock, where we found an immense spring of scalding hot water, which cooled after flowing off to a place where it spread out upon a plain; and afforded moisture to sufficient grass for our cattle during a short stay Some of our cattle perished in the desert, and all that survived were greatly injured. And now, that we had got to water, it was greatly impregnated with mixed alkaline salts, that made it unfit for use at the springs, even had it been cool there. But, in addition to this, it flowed off over ground filled with the carbonate and bi-carbonate of potash, which imparted to the water a taste which caused it to be known among the emigrants as saleratus-water."

Goldsborough Bruff

September 21, 1849

". . . We moved early to get out of this miserable spot, and to hasten over the next, and longest desert stretch. Course N. of W. and very crooked; but generally level white earth, and small dusty sage bushes scattered over it In about 5-1/2 ms. from Springs, passed a camp of people from the Cherokee country . . . 3 ms. further we reached a plain slightly elevated above the last, over which we travelled, still N. of W. a couple of miles, & noon'd, on right of the trail, surrounded by carcasses, and wrecks of wagons, and every kind of property Burnt remains of several wagons; and innumerable ox yokes, chains, bows, . . . Course, after halt, for 6 or 8 miles, N.W. the plain generally level. A plain [playa of Black Rock Desert] apparently more elevated, ahead of us, is very level and smooth, and in the sun, looks like a vast field of ice; however, the appearance has no cooling effect on my feelings.--Now 3 miles a S.E. course, N. quarter of a mile and then N.W. around a sand ledge. The mountains ahead look like baked clay, yellow,

orange, and red [Black Rock]. When we reached the white plain, I found that it was not elevated above the other, but was cover'd with a smooth white encrustation, probably alkaline.-- A very beautiful Mirage in the S.S.W. on this plain, at the base of some mountains. Oxen had stampeded for it, hoping to quench their burning thirst, and left their swelled up carcasses over the plain in that direction, as far as we could discern them. Passed since noon-halt, not counting those just mentioned, to the South, 103 dead oxen, 3 dead horses, and 1 mule Passed several pits, dug down to moist clay, where travellers had tried for water; a little more digging, in one place would have succeeded [underground Quinn River water]--near end of this stretch A little after Sun Set we reached, on our right, a high volcanic promontory, and went over knolls of sand, ravines, volcanic rock, and around this extraordinary head-land [Black Rock] $\frac{3}{4}$ of a mile, to the "Great Boiling Spring," and a grass valley, a distance of 21 miles from the "Rabbit Hole Springs," and terminating the great desert stretch, so much dreaded."

As can be noted from the preceding journal exerpts, this "dry stretch" from Rabbit Hole Springs across the Black Rock twenty miles took its toll on the emigrants. Wagons broke and were abandoned, oxen and cattle died by the hundreds, personal property was discarded to lighten their load. Portions of the trail in this area were consequently surveyed in order to determine if any historic artifacts or remains of the dead animals still existed.

From the Trails West marker (Figure 21) seven miles west of Sulphur along the road following the railroad tracks to one mile northwest of Black Rock the trail was surveyed on foot. Along the dirt road which follows the trail northwest for approximately four miles, bits of rusted iron, square nails (Figure 22), and a fragment of a wagon wheel spoke (Figure 30) were found along the perimeters and within the roadbed. From the end of the road to the point where the trail trace crosses the Quinn River (Figures 24-26), a few fragments of rusted iron and one concentration of bone fragments were found. Northwest of the Quinn River, a total of 13 concentrations of bone, including two weathered horns, were found (Figures 27-29).

In the following newspaper account, Mrs. Trego describes the accumulations of faunal remains she and her husband came across in the vicinity of the Quinn River and offers an explanation as to how they could have survived 125 years in the Black Rock Desert.

Peggy Trego, Bone-pile Trail Through A Desert Hell, Sacramento Bee, November 4, 1973.

"We camped 100 yards below the Quinn's end, hesitating to drive across the jigsaw surface of cracked mud in the waterless channel; . . . There was then no sign of the Lassen-Applegate Trail. A week later we returned to the same campsite. In the intervening seven days there had been strong winds; the Quinn's bitter end had retreated another 50 yards and the dry channel was hardened enough for the car to cross Just before reaching the Quinn, we noticed the first pile of bones beside our last weeks track . . . we crossed the Quinn . . . [and] in less than two miles there were nine more piles of them--the remains of nine oxen and one horse, insofar as we could make out--and they were very old bones. The peculiar alignment of the bone piles could mean only one thing we were on the Lassen Applegate Cutoff In most of the 10 sites, the bones showed only a small portion of their total mass above ground. We dug up one pile somewhat for photographs, then reburied it Where the bone pieces had been exposed intermitently in the past, their texture was crumbly and weathered to a kind of porous lace; where they had lain underground, the texture was like a very hard ivory. A geologist friend later explained the unusual hardness. He pointed out that partial replacement was present--the first step in fossilization

We had time . . . only to walk to two miles from the edge of the Quinn toward Black Rock itself The bone piles lay closer together as we approached the hummocks bordering the flat (Figure 31) Often the bone piles lay close to a hummock as though the dying beast had sought that meager patch of shade for a last rest As we walked back . . . the wind began to blow lifting the sand in little drifts and splatterings. The bones would soon be covered again."

Amy Dansie, faunal expert at the Nevada State Museum at Carson City, pointed out that the longest period she was aware of bone surviving on the surface in this area was 80 years (personal communication, June 8, 1977). Dr. Jim Firby, paleontologist at the University of Nevada-Reno, agreed with this time limit but added that underground bone should preserve 200 to 300 years at least, and that fossilization very likely would occur. The shifting sands of the Black Rock, which appear to periodically bury and unbury the bones, offer an explanation for the survival of these particular bone piles.

Due to the impreciseness of dating bone and the similarity of the skeletal structures of oxen and cattle, the question arises as to whether these represent the remains of cows that have more recently wandered out into the Black Rock Desert and perished. According to Les Boni (personal communication, June 17, 1977), Winnemucca BLM Wildlife Biologist, stray cows have on rare occasions been observed in the playa area. However, it would seem to be more than coincidence that these bones are found exactly along the route the emigrants are known to have traveled.

Further credence to the theory that these are actual remains of emigrant animals is provided by Devere Helfrich who explained how he had excavated some of the bones in this section of the trail and had found oxen and wagon artifacts associated with the bones. Helfrich suggested also that more metal artifacts can be found between Rabbit Hole and Black Rock prior to entering the playa since the alkali in the playa soil has a disintegrating effect on iron (Helfrich, personal communication, June 14, 1977).



Figure 19. Rabbit Hole Springs to Black Rock, aerial view. Rabbit Hole Springs, foreground; right hand fork is Applegate-Lassen Trail trace; left hand road is Nobles' Route (Hwy. 49) to Trego Hot Springs and Great Boiling Hot Springs at Gerlach.



Figure 20. Forks of Applegate-Lassen Trail (right) and Nobles' Route (left) northwest of Rabbit Hole Springs.

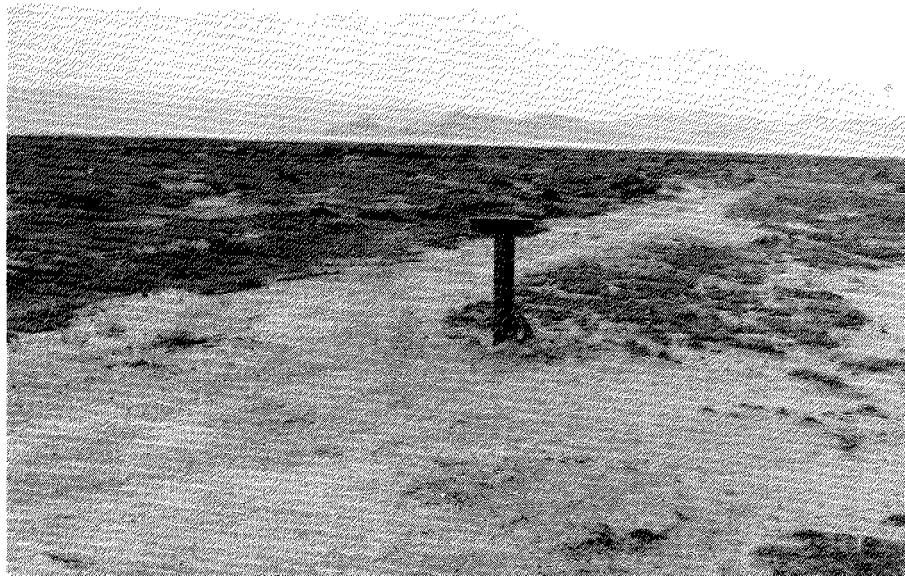


Figure 21. Seven miles west of Sulphur at the "edge of the desert." Black Rock Range in the distance.



Figure 22. Square nail found one mile southeast of Quinn River.

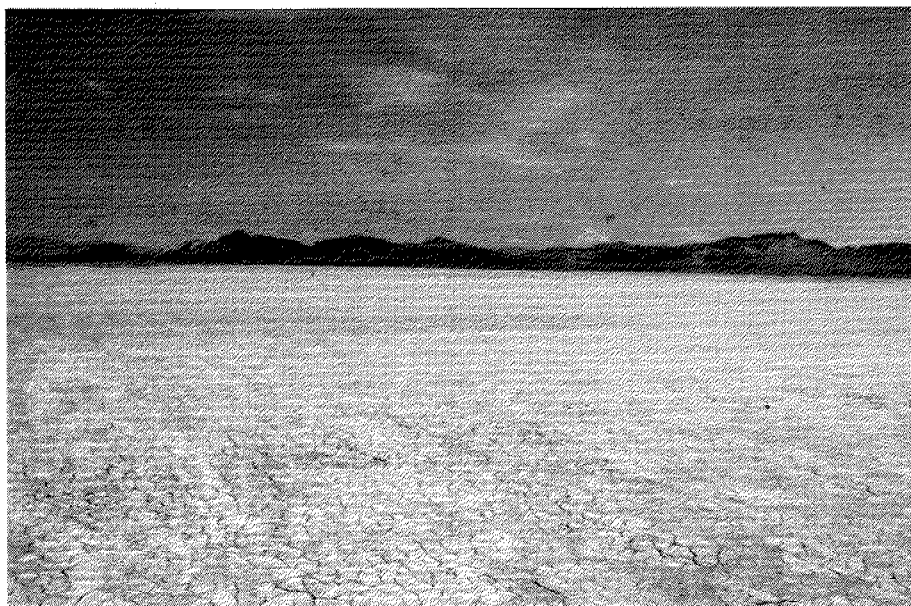


Figure 23. Looking across the Black Rock Desert to Black Rock.



Figure 24. The Quinn River, May 1977.



Figure 25. Quinn River in August 1977; in dessicated state as it apparently was in the summer of 1849 when traversed by emigrants.

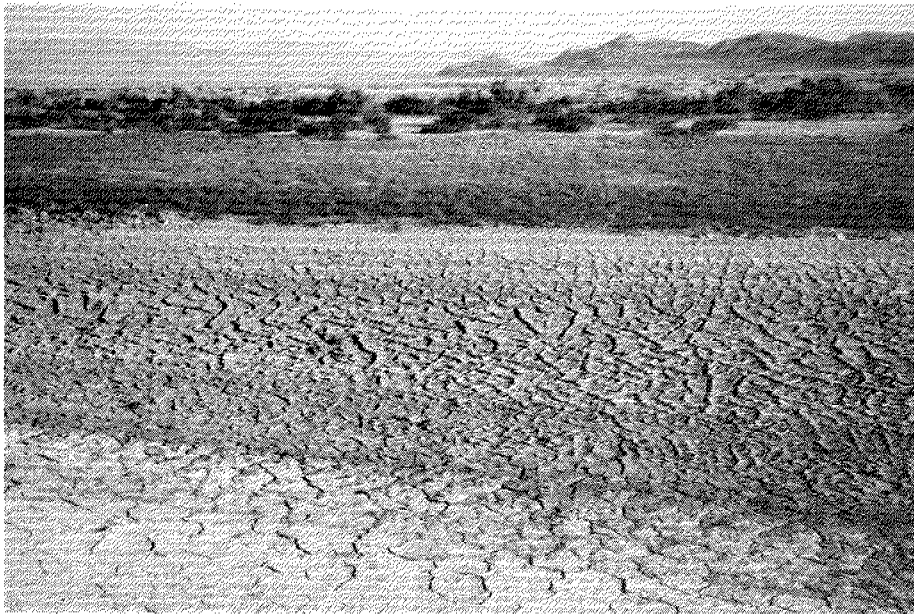


Figure 26. Bed of Quinn River, August 1977; looking northwest toward Black Rock.

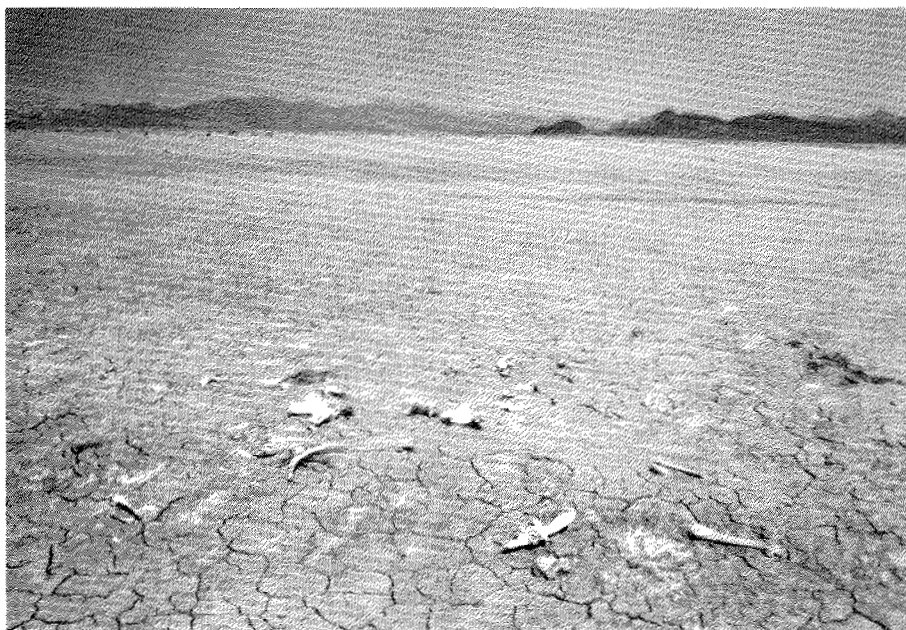


Figure 27. Bone fragments northwest of Quinn River.

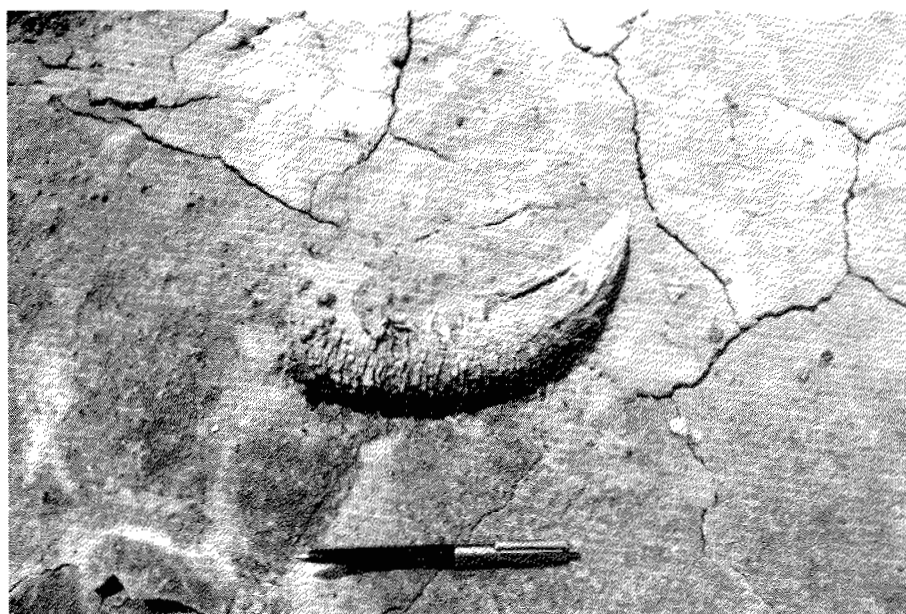


Figure 28. Horn found between Quinn River and Black Rock.



Figure 29. Bone found between Quinn River and Black Rock along trail trace.



Figure 30. Wheel spoke fragment found southeast of Quinn River along trail route.

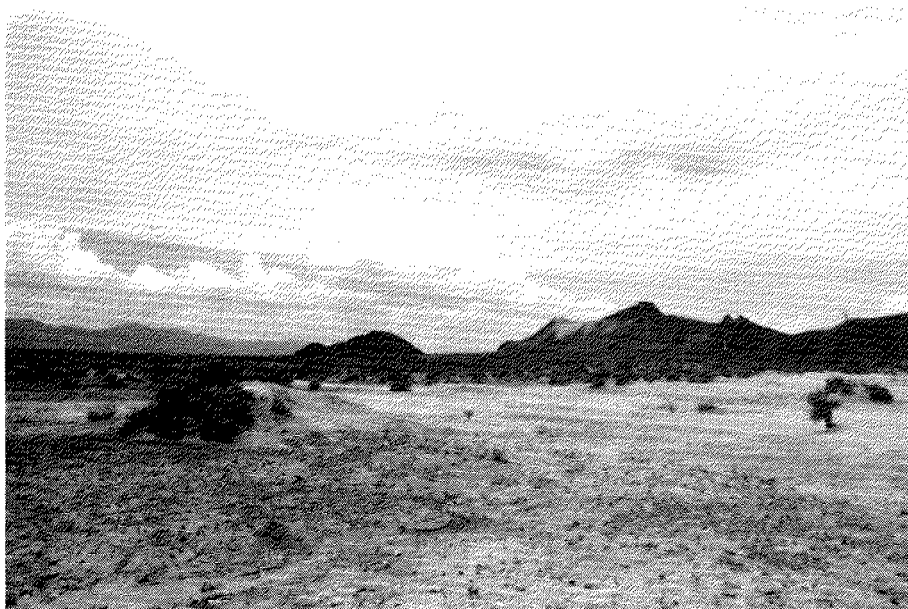


Figure 31. Hummock area and bone fragments southeast of Black Rock.

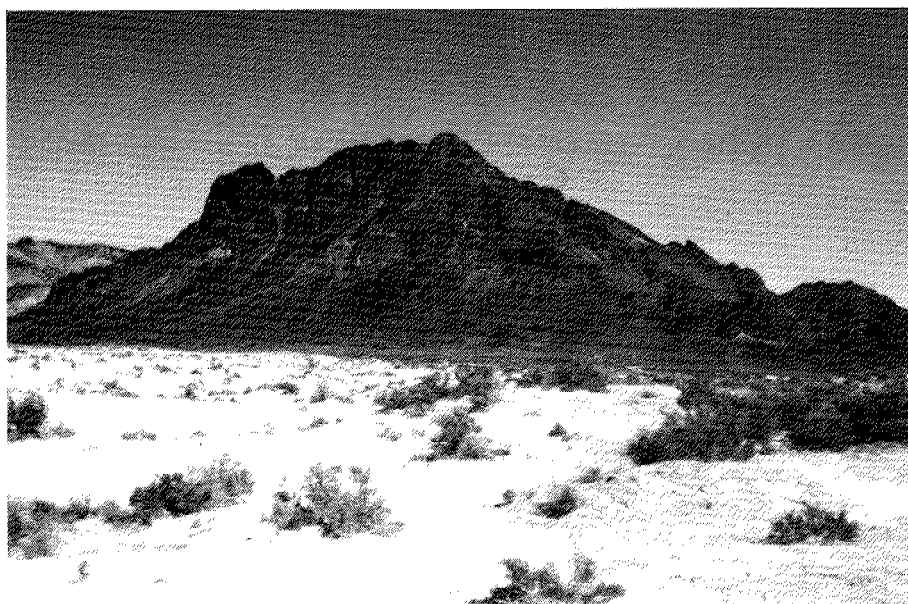


Figure 32. Black Rock shooting southeast from Hot Springs.



Figure 35. Meadowland extending west from Black Rock Springs.



Figure 36. Black Rock Hot Springs.



Figure 37. Bruff's illustration of Black Rock Hot Springs and runoff reservoirs dug by emigrants.

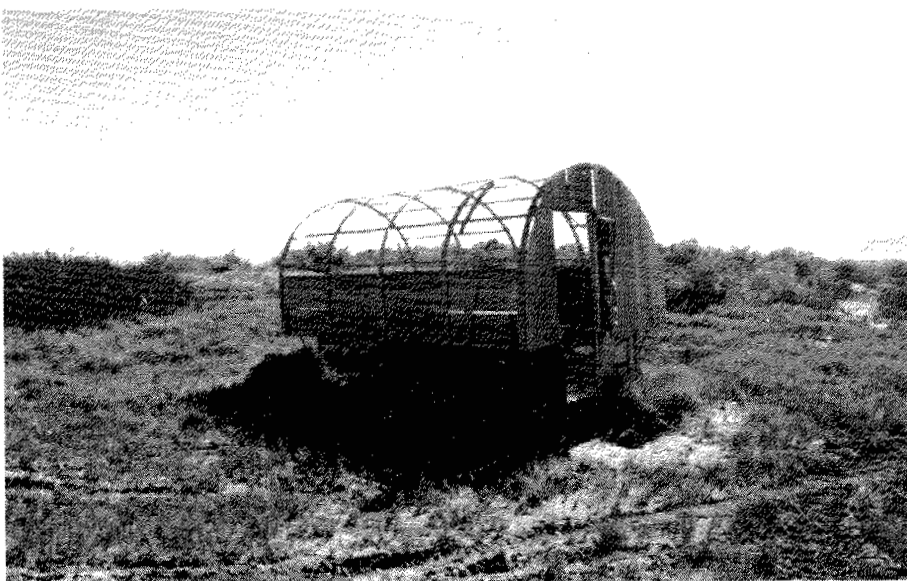


Figure 38. Abandoned shepherd's wagon at Black Rock Hot Springs.

Black Rock Springs to Double Hot Springs

From Black Rock Springs, the emigrants directed their wagons towards the pair of steaming hot pools known as Double Hot Springs (Figures 39-40) five miles to the northwest. The trail apparently ran somewhat west of the present road through an area of meadowland and sink holes which provided forage for the animals. The initial wagon traffic each travel season generally exhausted the grass at Black Rock Hot and emigrants frequently waylaid at a grassy area sometimes referred to as Casey's Ranch some three miles north of Black Rock Springs. At Double Hot, a lush meadow of approximately 100 acres fed by a runoff from the hot springs provided additional forage (Hunt, July 20, 1978, personal communication; Helfrich 1971:37).

In the following excerpts from journals the passage along this short stint of the journey is fully documented:

Alonzo Delano

August 17, 1849

"Beyond Black Rock Mountain were other peaks [Black Rock Range], which united with a chain north of us [Calicos] and along the base of which we were to travel in a westerly course. Learning that two miles beyond there was another and larger oasis [Casey's], towards evening we resolved to go to it At the second oasis [Casey's] we found better grass, but it was so filled with boiling springs, that there was danger in leaving cattle there We were told of another fine oasis [Double Hot] five miles beyond this, where there was every requisite for a good camp."

August 18, 1849

"On looking around us we saw a beautiful plat of green grass [Double Hot meadowland], covering about an hundred acres, which was irrigated by the water of several hot springs [Double Hot Springs]. Two of these were very large, and from them ran a rivulet of sufficient capacity to turn a mill; but fifty rods below the brook was too hot to bear the hand in. The water in the springs was clear and deep, and hot enough to boil bacon. We boiled our coffee by setting the coffee-pot in the water. Near them was one of lukewarm water, another of magnesia, and one that was quite cold. All these were within the space of a quarter of an acre"

Goldsborough Bruff

September 22, 1849

"Having been informed that good grass could be had west of this, a few miles left of the trail . . . I determined to give my mules the advantage of it . . . Continued on the usual trail some distance, passing many square cut tanks, containing cool but rather sulphurous water . . . Plain very level, except an undulating strip we passed over, of naked white earth, and a narrow depression of salt and soda encrustations, looking like snow, at a distance. We proceeded but 3 miles, rested and lunched . . . Here where we nooned was plenty of very dry grass, much grazed down . . . We now took the camp trail, travelling W.N.W.--N.W.--and W. In the first part we reached a pretty clear sparkling rill, about 6 ft. broad, and a few inches deep . . . found it quite hot--not sufficiently to scald, however. Next, on left, observed a cluster of hot Spring mounds, with their circlets of marsh and tall green grass . . . Now we go over white glazed earth again, with clusters of thick dead bunch-grass,--trail trending to the S.W. . . . The trail now goes N.N.W. & W.N.W. over very level dark brown volcanic debris, sprinkled over with small fragments of calcedony, obsidian, and arrow-points.--Lastly N.W. to a slight elevation, near base of the bounding hills, and plenty of pretty good grass,--on the sides of a considerable brook of good clear water. W. of our camp, very close to us, is the edge of a broad strip of very large grease-wood bushes. Next to the strip of grease-wood,--running length of valley, is an elevated plateau, parallel, and at the base of the hills. The indentations in it afford plenty of good grass, in patches. Here are also some tanks and springs of sulphur water. 8 3/4 ms. from noon-halt to this camp, making 11 3/4 miles today.--The trail was a circuitous one, on account of springs and marshes. A straight line from this to Black Rock, Boiling Spring about 8 ms.--The rock bears S.E. by E. from this camp."

Virgil K. Pringle

September 9, 1846

"Traveled 8 miles to another good camp with several hot springs, some of them very hot and one cold in 10 yards of a hot one. The country barren with the exception of the places watered by the spring."

E. P. Howell

August 25, 1849

"Grazed and rested till about 9 A. M. and moved up the valley north about 5 miles to better grass; and camped near another large boiling spring or rather several near each other [Double Hot Springs]. There are numbers of wells along this valley from two to six feet deep; but the water is not good."

Israel Hale

August 24, 1849

"The grass being eat out at the Black Rock springs we drove the cattle about two miles up the valley to some other springs [Casey's] and spent the night with them After breakfast we started for the Hot Springs [Double Hot], five miles further on and passed the Spring in the valley where we herded the cattle last night. I then saw the springs; they were not so large as the Black Rock Springs, but there are several of them As we came on this morning we struck or came through another plain then came to the first springs and after passing them we came through the third Salt Plain before we reached our encampment In this valley there are other springs that are equally hot as any that I have seen There is in this valley five, in a kind of huddle, two of them are large and three small [Double Hot]. They all run off in one branch and retain their heat a long distance. Grass is found only in the immediate vicinity of these hot springs. The balance of this valley, for we have mountains on both sides, is either salt plains or a barren with patches of greasewood . . . the valley [is] as level as a floor, consequently the road is fine."

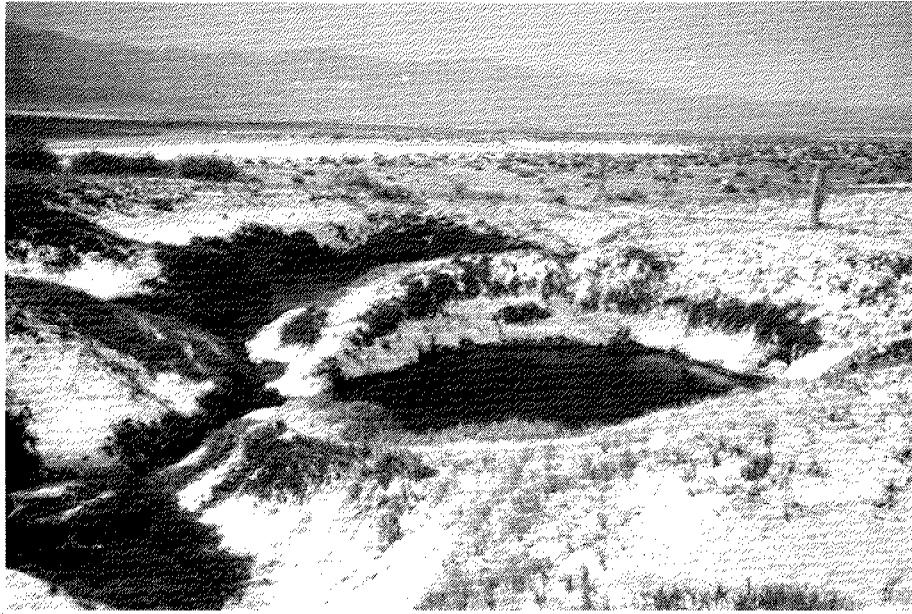


Figure 39. Double Hot Springs.
"There was fiddling and dancing in the camp tonight."
Bryan Farnam, August 23, 1849.

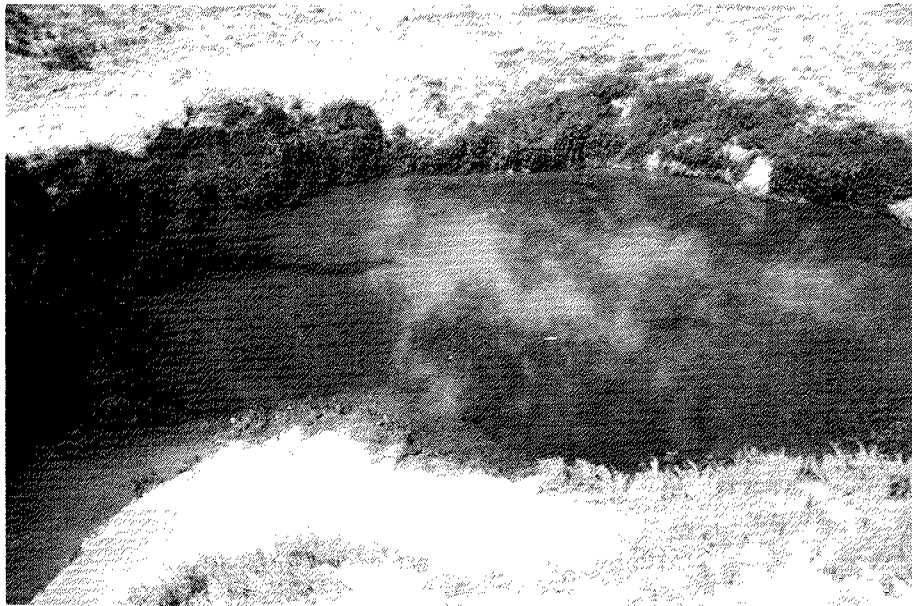


Figure 40. Double Hot Springs.

Double Hot Springs to Mud Meadows

The next major campsite after Double Hot Springs was at Mud Meadows 21 miles to the northwest. The trail between these two points was another arduous stretch through deep sand with little water or grass available. Though the damming of Mud Meadows Creek at Mud Meadows has since cut off most of the creek's flow into the Black Rock Desert, during the years of emigrant travel it provided limited amounts of water, grass, and campsites. The main body of emigrants traveled one-half to one mile east of Mud Meadows Creek, turning off occasionally to rest in grassy areas along the streambed. This route was recorded during the 1882-85 United States Geological Survey of the Applegate-Lassen Trail (Helfrich 1971:38-39).

A common misconception has been that the road from Double Hot Springs to Hardin City, which curves along the base of the Black Rock Range, was actually the original emigrant trail. While some emigrants, including Goldsborough Bruff, may have strayed from the main trail to utilize the water and forage at Little Double Hot Springs (Hardin City), this route is broken by dunes and gullies, making for extremely difficult wagon travel. The Mud Meadows Creek route, although slow and fatiguing due to the deep sand, was still a more desirable course of travel. The terrain, greasewood-sage covered sand with occasional open flats, is fairly level. It is a much more direct route to Mud Meadows and provided easier access to grass and water. Most likely, the road at the base of the Fox Range came into existence when mining activity was occurring at Hardin City during the 1860s.

Although much of the trail between Double Hot Springs and Mud Meadows is no longer visible due to ORV activity, grazing, and erosion caused by runoff from the Black Rock Range, some excellent traces do exist. The trail is visible from the air for approximately three miles south of the point where the Hardin City road joined the Applegate-Lassen Trail. Water apparently has coursed through the channel created by use of the trail. Some very clear traces may also be viewed between Mud Lake and the Applegate-Lassen/Hardin City road juncture. These traces are on the west side of the jeep trail (Figure 43). Except for these areas, the old trail basically followed the same course as the present road to Mud Meadows (Griffin, Hunt, July 8, 1977, personal communication; Helfrich 1971:38-39).

The following are journalists descriptions of this portion of the trail:

Alonzo Delano

August 18, 1849

"We had yet another dreary part of the desert to cross, over deep sand for twenty miles, without water; and having it now in our power, we provided against the trails we had

already encountered, by cutting a good supply of grass with our knives and filling our kegs with water. The latter was hot, but it cooled in the chilly night air and was very sweet and good we left about sunset, and were soon plowing our way ankle-deep in the yielding sand . . . and finding the traveling so difficult, we occasionally turned from the beaten track to find more firm footing, but without effect. It being all alike, we finally returned, and doggedly stuck to the path . . . we lay down in the sand to rest, but the cold night air and the howling of the hungry wolves, who would have made us "bosom" friends if they could, prevented us from sleep."

August 19, 1849

"A little water and grass having been found a mile off the road [Mud Meadows Creek] we stopped for breakfast and let our cattle graze, and then hurried on. Our course from Black Rock had been west of north, and parallel with the chain of mountains we wished to cross After breakfast we continued on, and about noon we arrived at a kind of wet valley [Mud Meadows] containing several acres of excellent grass and plenty of good water, which was a matter of rejoicing for all."

Israel Hale

August 25, 1849

"We soon left the grass and came into a barren of greasewood, and occasionally would pass through a flat without any vegetation of any kind We drove eight miles and heard of a spring off to the left at the foot of the mountain We sent and got a canteen of water. It was cool and well tasting. It was a great treat After the moon went down our men would go ahead of teams and touch a match to a bunch of greasewood bushes that would burn although green, as will dry oak leaves, which gave us tolerable light to drive by."

E. P. Howell

August 25-27, 1849

"Our next stretch is 20 miles without grass to Muddy Lake Our course was almost in a direct line up the valley, nearer the right hand mountains - north about 150 W until we came to the point of the mountain on the right, then our course was north 3 or 4 miles to the valley where we camped. In 9 miles we passed a sulfur spring one mile on the left of the road. About 6 A.M. on Monday morning we arrived on a little creek with good grass; having come 20 miles at least."

Virgil Pringle

September 10, 1846

"Travel 20 miles of heavy pulling road and camp at a grassy flat with plenty of water but bad for drinking."

George Keller, p. 19

"The road between the springs and Mud Lake is pretty sandy, - very little grass or water, - distance twenty-five miles."

Kimball Webster

September 17-18, 1849

"Started in the afternoon and traveled eleven miles where we found some grass and camped . . . we remained here until afternoon, when we broke camp and traveled 15 miles to Mud Lake where we stopped for the night."

Hardin City

About six miles northeast of Double Hot Springs lies an important historic site, the abandoned mining town of Hardin City. It has an intriguing history. In 1849, James Allen Hardin was a member of a wagon train passing along Applegate-Lassen Trail. Provisions being low, he and two companions left the wagon train at Double Hot Springs and headed northeast toward the hills of the Black Rock Range in hopes of shooting game. They found no game, but on descending the west slope of the hills some three or four miles north of Double Hot Springs, they came upon a ravine littered with pieces of some bright, shiny material. Taking it to be lead, they gathered some 30 or 40 pounds of the material. Back in camp they melted part of it down and formed it into bullets. Hardin pocketed a piece of ore and continued on with the wagon train to California. If he had any inkling of the true nature of this material, evidently the presence of hostile Indians in the area and the short supply of provisions discouraged him from any further prospecting. It is doubtful that he thought his find to be anything any more valuable than lead, though, as a number of years passed before he had his sample assayed. The assayers verdict was that it was a carbonate of lead and silver and very rich in the latter. Great excitement ensued and in July of 1858 a party of 15 men accompanied Hardin from Petaluma, California, to the Black Rock Range with high hopes of relocating Hardin's ledge. But, either Hardin's memory was faulty or desert cloudbursts had seriously altered the terrain, for search as they might the silver laden ravine could not be located. Hardin and others returned to the area repeatedly over the next few years, but with little luck. Finally in 1866, a ledge was discovered and, though not the same ore as Hardin's, it was assayed at the rate of \$300 per ton at Dall's Mill in Washoe Valley south of Reno. Prospectors headed for the Black Rock Range in droves and took their ore samples to an assayer named Charles Isenbeck who set up camp there. While other assayers frequently came up with little or no silver content in the ore, Isenbeck almost never failed to return a small button of silver to his client. He claimed a special process was necessary to extricate the silver. Conflicting results also came from the milling of the ore. Samples of the same ore processed at different mills sometimes paid nothing, and at other times paid as much as \$1,000 a ton.

With lumber from Honey Lake Valley, machinery from San Francisco and hand-shaped native rhyolite blocks, two brothers names Evans began construction of a five stamp capacity quartz mill in 1866. Using greasewood roots for fuel and the "Bartola" milling process, the mill was ready for operation in December of that year. A city of "15 houses and a thousand rats" sprang up and Hardin City was born. Isenbeck was

hired as Superintendent of the mill, but even with his "special processes," no silver could be garnered from the ore. The mine closed down operations and around 1870 the machinery was hauled to Haydin Mill south of Aden, California (Fairfield 1919:419-440; Murbarger, April 1955).

The best answer to the mysterious fluctuation in the value of the ore taken from Black Rock Range has been advanced by Fairfield. He points out that the Dall Mill, which processed many of the high yielding ores from Black Rock, was also processing ore from the Comstock Lode. The Bartola process was used, the ore crushed, roasted, and then put into hollow cylinders with old iron and rolled around. The batteries and pans were not very thoroughly cleaned and gold and silver clung to the old irons. He suggests that alkali dust on the Black Rock ore cut loose the gold and silver which clung to the old irons. The first batch would work clean the batteries and pans of what silver there was and, consequently, the second batch was relatively poor. As for Isenbeck's fortitude in coming up with silver buttons for everyone, some suggest he was getting paid at a goodly rate and manufactured the buttons himself. Others suggest that there was enough trace of silver to extricate such buttons. Hardin's rich ledge, on the other hand, may very well have been legitimate. If so, it most likely was buried by a mudslide. Today the crumbling granite chimneys mark this spot (Figures 41-42)(Fairfield 1919:439-440).

Just before reaching Mud Meadows, the emigrants passed to the left of the mountain known as Paiute Peak. Bruff sketched this peak while nooning at Double Hot and nicknamed it "Fremont's Castle" because of its fortress-like appearance.

Ten years later, in April of 1859, Peter Lassen was killed on the slopes of Paiute Peak while on a prospecting expedition. Though he was reportedly killed by Indians, it was rumored that white men, bitter about the hardship of the trail he had encouraged them to take, had murdered him (Fairfield 1916:171-178). A companion was also killed. The bones of one of the dead men were brought back to Susanville and buried beneath a monument commemorating Lassen. In reality, though, Lassen's bones may still remain on the barren slopes of Paiute Peak (Tom Eilers, personal communication, June 7, 1977).



Figure 41. Remains of Hardin City 5-stamp capacity quartz mill.



Figure 42. Hand shaped rhyolite blocks of mill chimney at Hardin City.

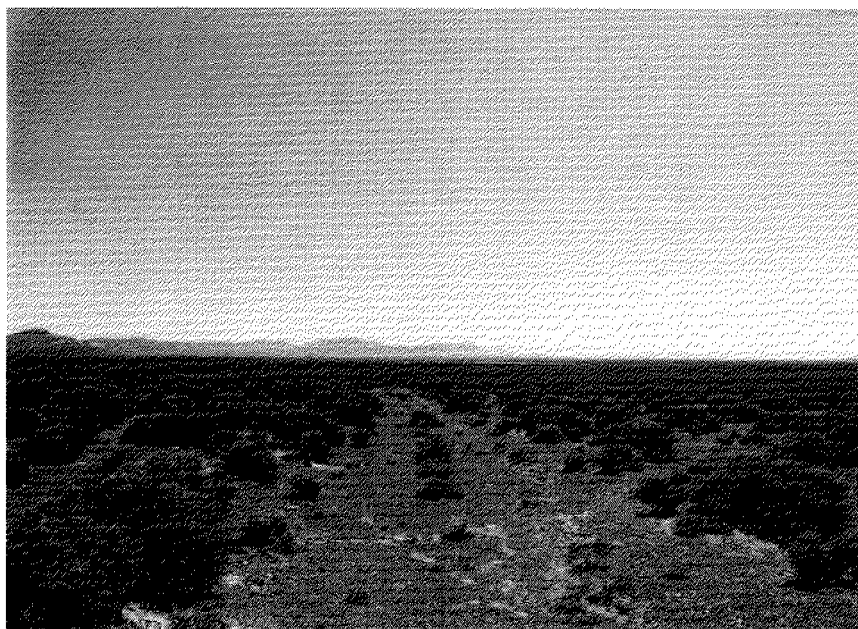


Figure 43. Trail traces on west side of present road in Black Rock Desert north of Hardin City.

Mud Meadows to High Rock Canyon

After accomplishing the rugged twenty-plus mile stretch of "heavy pulling road" from Double Hot Springs, the emigrants generally laid over for a few days of rest in the lush grass of Mud Meadows. Mud Meadows included several hundred acres of level, deep grassed plain, watered by Warm Springs Canyon to the northwest, Mud Meadows Creek to the northeast and several warm springs in the vicinity. In the early 1960's, a dam was built at the extreme southern end of the meadows and the resulting reservoir is known as Mud Lake. The emigrants generally camped in the southern end of the meadows and some of their campsites, as well as a portion of the trail, are submerged beneath the waters of the reservoir. However, there are some short traces still remaining near the dam and around the lake (Hunt, personal communication, July 7, 1977).

Mud Meadows was an area where emigrants experienced problems with Indians. Horses and cattle were stolen and butchered and at least one man was killed. Emigrants, fearful of attack, travelled in groups as much as possible through this area (Delano, August 19-20, 1849).

Just north of Mud Meadows at Soldier Meadows is a site of historic interest. Located here are the remains of an outpost of Camp McGary. Camp McGary was built at Summit Springs near Summit Lake in 1865 for the purpose of protecting the Idaho mail route to Chico, California. Shortly after the camp was established, a 100-horse capacity barn, a mess hall, officers quarters, and barracks, with underground tunnels leading from the barn and mess hall to the barracks, were constructed at Soldier Meadows. The barn and several of the buildings (Figures 44 to 45) still stand and have been incorporated into present-day Soldier Meadows Ranch (Ruhlen 1964:44).

From Mud Meadows the trail extended west climbing a gradually ascending sage plain of loose volcanic material, generally paralleling Fly Canyon for several miles (Figures 48, 49, and 52). The emigrants then descended into Fly Canyon itself by way of the "wagon slide"-- a rocky 45 degree angle slope of about two hundred feet where they either lowered the wagons with ropes, locked their wheels with chains or poles, or added an extra team of oxen to slow the momentum of the careening wagons (Figures 53-57). Though most efforts were successful, diarists tell of wagons toppling end over end and crashing to smithereens at the base of the slide (Helfrich 1971:47). Bruff illustrated this hazardous point of the trail in Gold Rush and his sketch compares very accurately to the same feature today (Figures 54 and 55).

Apparently, on departing from Mud Meadows the emigrants took various routes to avoid the many marshes in that region. These diverse routes joined into a single road at a point approximately 1-1/2 miles east of the wagon slide. From this point on, the route basically follows the present road though there are very obvious trail ruts that can be seen on the right hand side of the road approaching the wagon slide (Figures 50-51). Excellent traces of the trail can also be seen cutting north-west to the present road from Mud Meadows (Figure 47). On a portion of the latter trail segment, Thomas Hunt pointed out some fragments of black glass (Figure 46) and said that the same type of glass is very common along the Carson Route (Hunt, personal communication, July 7, 1977; Helfrich 1971:45-47).

According to emigrant diarists, a rabbit snare consisting of a fence of upended sage bushes into which the rabbits were driven by Indians, was crossed by the trail in 1849. Helfrich (1971:47) places this about 1/2 mile west of the juncture of the Mud Meadows trails. No remains of this fence have been identified to date, though Hunt believes he has located a rabbit fence in the High Rock Lake basin (Figure 58).

After completing the perilous descent, the emigrants continued along the rocky canyon floor for nearly 1/2 mile at which point it became impassable. They crawled out of the canyon and worked their way along a narrow ledge bordering the northern edge of the canyon. On the southern wall of the canyon across from the point where the wagons ascended from the chasm floor, the word "Spring" has been inscribed with axle grease. Wagon traffic continued along the edge of the canyon the remaining 1/2 mile of its extent and then continued in a westerly course across the northern shore of High Rock Lake, which in 1849 apparently held a small amount of water. They then turned north into the towering red rock walls and grassy canyonlands of High Rock Canyon where several emigrants marked their names and dates of travel in axle grease on the rock. At the entrance to High Rock Canyon, the Applegate-Lassen Trail enters the Susanville BLM District.

The entrance to Little High Rock Canyon (south of High Rock Canyon) was the site of the last Indian massacre in this nation's history. In 1911, four Basque shepherds were slain by a group of Bannock Indians camping in the area. Their mutilated bodies were found frozen in the streambed one month later and a posse was formed for a manhunt. After a chase, which covered hundreds of miles, the band and their leader, Shoshone Mike, were gunned down in Rabbit Creek Wash northeast of Golconda near Kelly Creek Ranch (Hyde 1973; Mack 1968).

In the High Rock Lake basin there are traces of the trail to the north of the present-day road. In this area the emigrants spread out to avoid each others dust. Consequently, there probably were a number of tracks joining at the mouth of High Rock Canyon during trail days (Hunt, personal communication, July 19, 1977).

Just north of Fly Canyon is a saddle on which trail traces are visible. Thomas Hunt believes that later emigrants avoided the treacherous wagon slide and the rough passage through Fly Canyon by going over this much smoother route. He has as yet found no journals to back up this theory though it seems curious that several of the journalists make no mention of the wagon slide (Hunt, personal communication, July 7, 1977).

The following journalists descriptions refer to the Mud Meadows to High Rock Canyon portion of the Applegate-Lassen Trail:

Alonzo Delano

August 20-21, 1849

"The horse lay near the road, and the gentlemen Digger Epicures had cut off his head, and taken a large steak from a hind quarter generously leaving the remainder of the poor raw-boned carcass for the maws of the white devils who had brought it so far to grace an Indian board We kept a strict guard through the night . . . yet notwithstanding our caution, the indians came down from the hills and drove off one cow and one horse, and badly wounded two more horses A volunteer party, as usual, was formed to pursue the robbers. . . . Suddenly they were brought to a stand by a loud noise above them, and looking up, they saw the marauding party on a high rock a thousand feet above, making sounds of derision and defiance at them. It was deemed useless to follow them any further"

"The road turned due west over a sand hill and sage plain and after traveling about four miles, we came to the entrance of one of the most remarkable curiosities among the mountains. It was a canon, or narrow rocky pass through the mountains [Fly Canyon] Soon after crossing the oasis where we had been encamped, I went a little off the road; through a small lateral valley on the left, I observed an opening in the rocks . . . , and on descending, I found it a narrow pass, leading in the general direction which the wagons were taking, and therefore followed it I followed the rent a mile and a half On coming out of the chasm I found myself near the road, and where there was an Indian snare for catching hares Pursuing my way a little more than half a mile I came to a steep hill, down which the wagons were let with ropes into the canon [Wagon Slide] Between the high, rough walls of rock, we sped onward perhaps four miles, when we came to an opening of probably two miles in circumference [High Rock Lake], enclosed by rocky ledges, when it closed again with higher rocks than before [High Rock Canyon]."

Israel Hale

August 27, 1849

"The first six miles was an entire up-hill business, for we crossed a mountain that was six miles from the foot to the summit. It was not very steep, but a constant drag. On the opposite side the hill was short but more steep [Wagon Slide], but the road was rocky which made the traveling bad. The balance of the road to the canyon went through a flat [High Rock Lake] and was very good."

Goldsborough Bruff

September 25, 1849

" . . . we turned W.N.W. At our left was the embourse of a canon We turned short, around the point of a low volcanic spur, to our left After nooning we pushed on, over [as] badly diversified and crooked a trail as could be found. In fact, to avoid the marshes, there were many trails, and we adopted that most travelled. About a mile of alternate marsh and level baked earth, then over volcanic powder and surfaces First portion the trail ran N.W. after which it curved around, to avoid marshes, to the S.W. some few hundred yards; then very senuous, but on a mien westerly direction, gradually ascending, to the base of the hills In the afternoon we reached a depression, running S.W. across the trail; to our right and in front hills rapidly ascended; and this depression became a deep rugged gulch, on our left, probably to the distance of a mile, when it opened into a deep harrow cannon - the outlet of the Mud Lake Basin Crossed the stony bed of the winters torrent, and descended S.S.W. a long hill tolerably smooth The road terminated as it were, at the edge of the very apex of this hill [Wagon Slide], and . . . I looked down and for a while thought it must be "the jumping off place"! Here down this very steep descent must our wagons roll (I observed to friend Barker, that I though it a very de "scent" road.) The declevity and its base, retained vestiges of unfortunate traveling in the shape of broken wagons, wheels, hubs, tires, axels, and 3 dead oxen. A small flat circular sweep of the road to the right, from the base of the steep sand bluff, and we ascended a very stony roll of ground to the brow of another deep descent . . . a long ledge cropping out Around this [hill] keeping sideling along

this shelf we drove, then as gradually as we could, turned left . . . and double-locked carefully made the long descent, landing in a low grassy bottom where the road turned left, a short distance in a sort of gorge, then W. across a broad low level basin A mile or so over the head of the basin, bro't us to the entrance of the grand canon - High Rock Canyon"



Figure 44. Stone leanto at Soldier Meadows Ranch constructed in 1865 as part of Fort McGary Outpost.

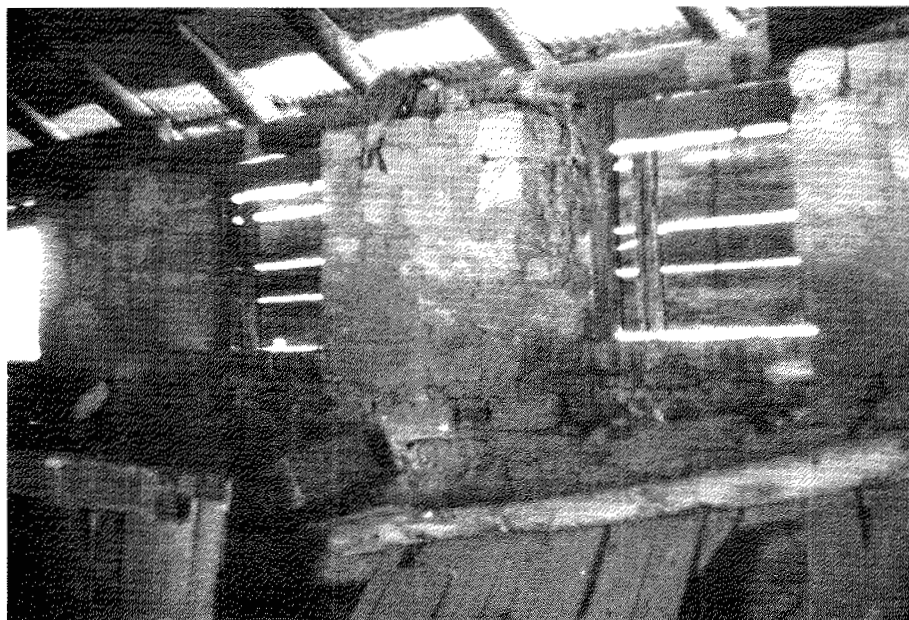


Figure 45. Original walls of 100-horse barn at Soldier Meadows Fort McGary Outpost.

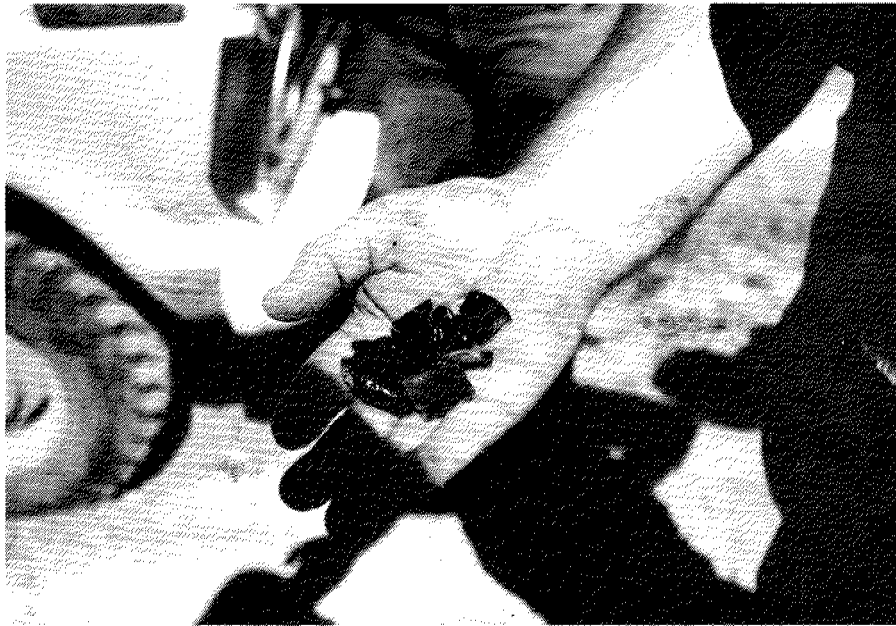
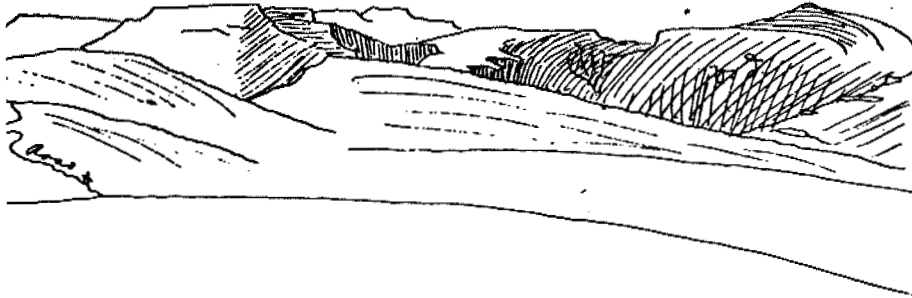


Figure 46. Black glass found along trail trace on east side of Fly Canyon.



Figure 47. Trail traces east side of Fly Canyon.

*Singular volcanic formations, 25th. right of road
rising hills, bound? Mudlake bottom.*



[MUD LAKE BOTTOM]

Figure 48. Bruff's illustration of trail route from Mud Meadows to Fly Canyon.

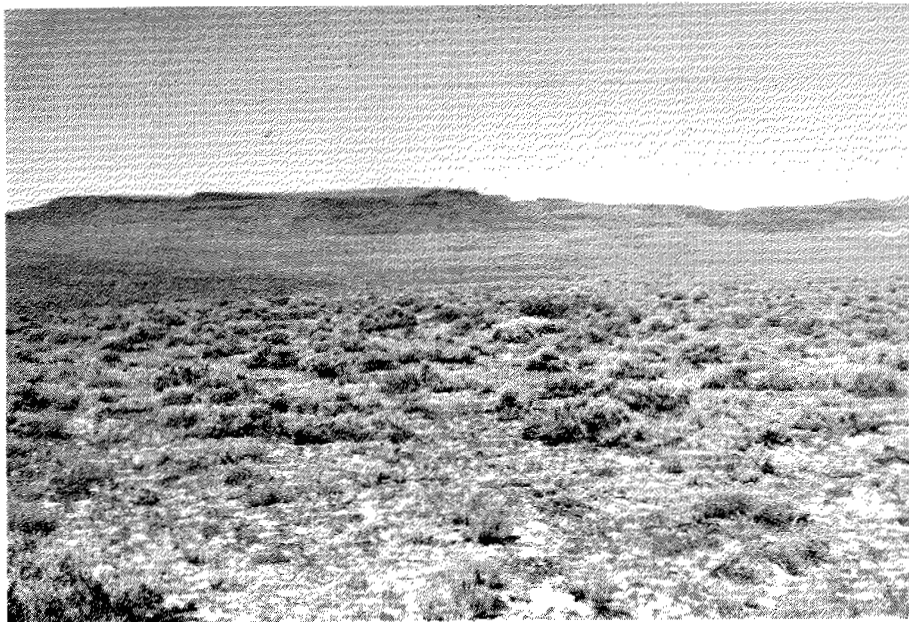


Figure 49. Shooting west toward Fly Canyon. Vista is identical to that sketched by Bruff above in Figure 48.

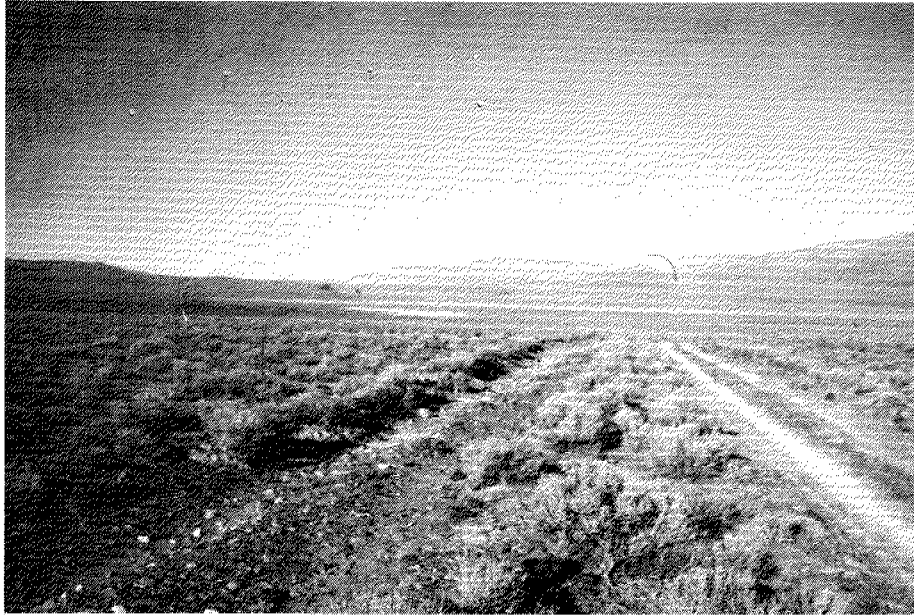


Figure 50. Present road and trail traces
(left) east of Fly Canyon looking east.



Figure 51. Trail traces on north side
of road approaching Fly Canyon.



Figure 52. Fly Canyon east of the wagon slide. Trail passed short distance to left.

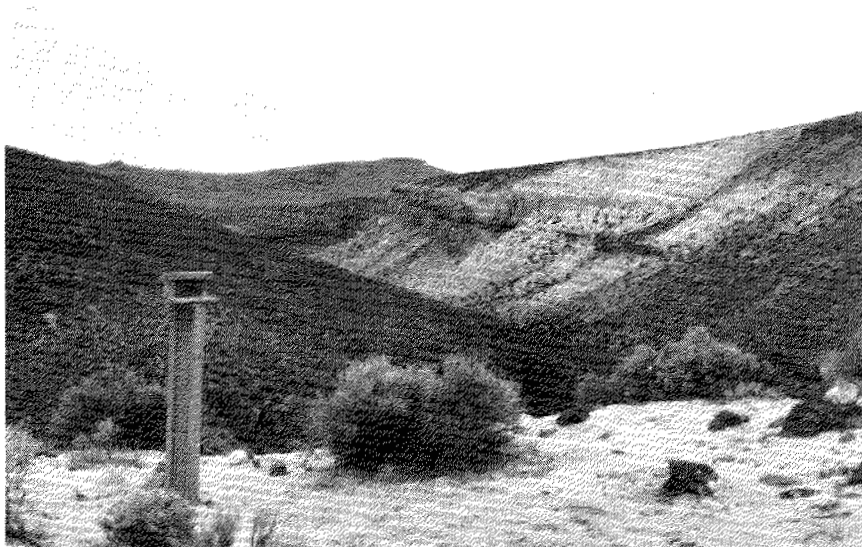


Figure 53. Fly Canyon at the "drop off point."



Figure 54. Fly Canyon wagon slide.
 "I thought it must be 'the jumping off place'
 down this very steep descent our wagons must roll
 I thought it a very de"scent," road"
 (Bruff, September 25, 1849)

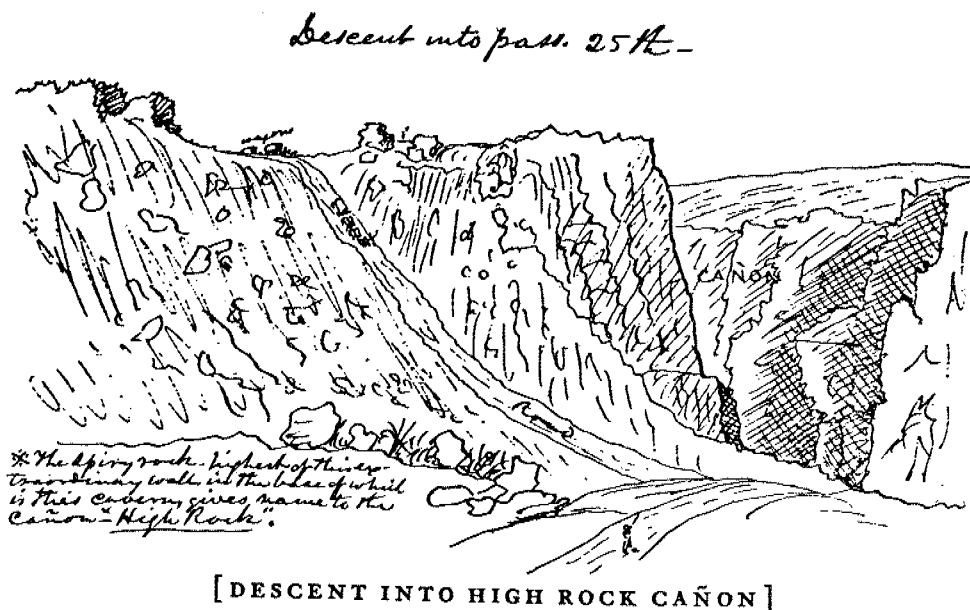


Figure 55. Bruff's illustration of wagon slide and route of descent.



Figure 56. Fly Canyon wagon slide
(foreground) and Mud Meadows (background).



Figure 57. Fly Canyon wagon slide (upper left hand corner).



Figure 58. Rabbit fence in High Rock Lake Basin. Rock alignment can be seen curving upward across photo from lower right hand corner of photo.



Figure 59. Looking west from Fly Canyon to High Rock Lake. Lake was full when this picture was taken in 1976.

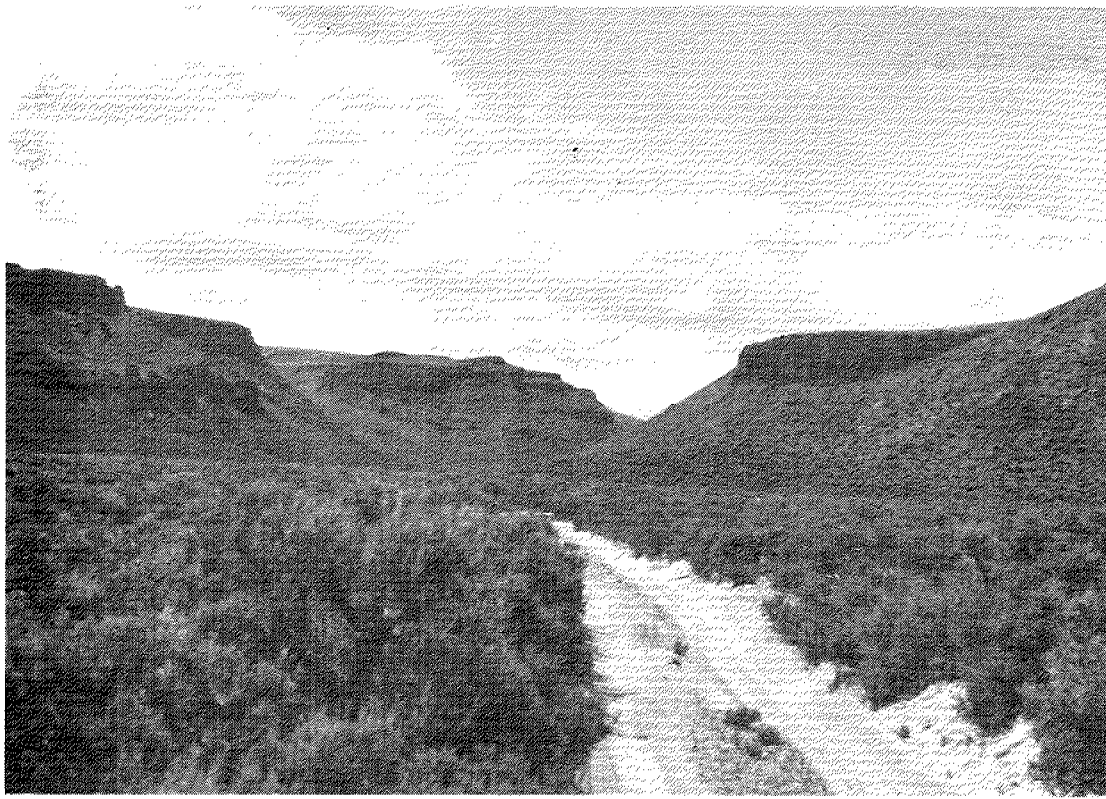


Figure 60. Entrance to High Rock Canyon.



Figure 61. Entrance to Little High Rock Canyon,
site of last Indian massacre in U.S. (1911).

Conclusion

This section will summarize the existing evidence for each segment of the trails described in this report and provide suggestions as to what protection the individual areas warrant. Presently the Buffalo Hills EAR recommends "no leasing" for lands extending one mile from the center line of each of the trails except for a 13 mile segment of the Fremont Trail for which a corridor one to three miles south of the center line has been excluded from leasing. The trails in the Black Rock Desert Area are also within territory included in a National Register Nomination and National Monument Proposal. In addition, several of the emigrant campsites are at, or in the vicinity of, points nominated for National Natural Landmark status by Alvin McClain.

The Federal Register describes sites and areas of National Register quality as being those which have "significance in American history" or which are of "state and local importance" and which "possess integrity of location, design, setting, material, workmanship, feeling, and association." They should also be connected with persons or events significant in our history "have yielded or may be likely to yield information important in prehistory or history" (Federal Register, Vol. 38, No. 18, 1974, 36 CFR 800.10, p. 215).

These National Register criteria were used as a basis for the succeeding recommendations. In general, where twentieth century intrusions in the form of modern structures, highways, or machinery exist, the exclusion from leasing of a narrow corridor in the immediate vicinity of the trail has been considered adequate protection as the integrity of setting and feeling has already been impaired. However, where there are no such intrusions from the present and the route of the trail is clear through either actual physical remains or through comparison with emigrant journalists descriptions, a "line of sight" exclusion has been recommended.

Applegate-Lassen Trail--Summary and Recommendations

Rye Patch Reservoir to Antelope Springs

Portions of the trail from the 1849 cutoff at Rye Patch (Lassen's Meadows) to the Antelope Springs have been disturbed or eradicated by water erosion and ORV traffic. However, the trail is quite distinguishable from the air and portions of the trail are visible from the ground, including the junction of the California Trail and the Applegate-Lassen Trail at the northern end of Rye Patch. Willow and Big Antelope Springs have been developed but the surrounding environs are relatively untouched. The grave marker of a pioneer woman who died in 1860 remains at Big Antelope Springs, though a portion of it has been broken off by vandals.

Cattle water at the springs and graze in the vicinity. Other impacts on the integrity of experience and setting on this portion of the trail include mining activity on Majuba Mountain and moderate vehicular use of dirt roads in the vicinity of the trail.

A narrow corridor following the route of the trail is suggested for exclusion from leasing for this trail segment.

Antelope Springs to Rabbit Hole

Traces of the trail, over "Emigrant Pass" at the southern end of the Antelope Range and through the Kamma Mountain Pass south of Rosebud Canyon, are clearly visible from the air. No ground survey of the area was conducted. The majority of the later alternate route, over Inlay Summit past Maud's Well and through Rosebud Canyon to Rabbit Hole, is part of the present road and has been utilized by modern vehicular traffic. Occasionally, however, original traces, such as the wagon ruts to the south of the present road at Inlay Summit, can be observed. Rabbit Hole Springs has been developed and three large springs have replaced the muddy holes of the trail days. Two wooden shacks and tailings remain from 1930's gold mining operations at the site.

A narrow corridor following the route of the trail is suggested for exclusion from leasing.

Rabbit Hole to Black Rock

There are excellent traces of the trail in this section. The trace, as it extends from Rabbit Hole to the Western Pacific Railroad tracks, is extremely clear from the air. No ground survey of this portion has been conducted, but Thomas Hunt and Devere Helfrich maintain that emigrant artifacts can still be found in this section.

Northwest of the railroad tracks, the trail is followed by a modern dirt road for approximately four miles. Bits of rusted iron, bone fragments, rusted square nails, and one segment of a wagon wheel spoke were observed during a ground survey of this segment.

From the end of this road to Black Rock portions of the trail are apparent leading in a direct line to Black Rock. The route is further delineated by piles of bone remaining from the thousands of oxen and livestock which perished along this stretch during emigrant trail days.

From Rabbit Hole to the Western Pacific Railroad tracks, a narrow corridor along the route of the trail is recommended due to the modern intrusions of the railroad and Highway 49. However, from the Western Pacific Railroad tracks to Black Rock a "line of sight" exclusion is recommended. Justification of this line of sight exclusion is included in the following discussion of the Black Rock to High Rock recommendation.

Black Rock to High Rock Canyon

From Black Rock to Double Hot Springs the trail area has been impacted by ORV traffic as well as erosion and actual traces have been obliterated. However, from journal descriptions it can be inferred that emigrants traveled through the grassy seep area to Double Hot Springs, often waylaying at a seep midway. From Double Hot to Mud Meadows most emigrants continued straight up the valley along a route paralleling Mud Meadows Creek and about one mile east of it. This road between the end points of the "bow" road to Hardin City has been partially lost due to grazing, ORV traffic, and erosion. However, journals describe its location accurately and a ground survey would probably yield further evidence. Some very clear trail traces do exist in this area. The trail is visible from the air for approximately three miles south of the point where the Hardin City Road joined the Applegate-Lassen Trail. Some very clear trail traces may also be viewed on the west side of the jeep trail between the juncture of the two roads and Mud Lake. Except for these segments the trail is followed very closely by the present road to Mud Lake Reservoir.

Mud Lake Reservoir has inundated a portion of the trail but some short traces can be seen around the lake. From Mud Lake there are quite clear traces of the trail continuing northwest from the meadows to connect with the present road to Fly Canyon Wagon Slide. There are also traces to the right of this present day dirt road approaching Fly Canyon. The Wagon Slide has been illustrated in Bruff's Gold Rush as well as the road approaching it. The first half mile of the trail is within the stream bed itself and thus actual traces have been eradicated. The word "SPRING" has been written on the wall opposite the point the emigrants exited the canyon to continue along a ledge on the right hand side. This portion basically corresponds with the present road. From the Wagon Slide to the entrance of High Rock Canyon the emigrants generally spread out to avoid traveling in each others dust but traces of the main route can be seen to the north of the main road across the northern border of High Rock Lake Basin.

Historic sites within the Black Rock to High Rock Section include Hardin City, Fort McGary Outpost at Soldier Meadows, and the site of the Little High Rock Indian Massacre.

The Black Rock Desert to High Rock Canyon portion of the trail is unique in that the surrounding area is virtually free of twentieth century intrusions. There are innumerable locations in America where one can view impressive trail ruts carved by the wagon wheels of the 19th century western migration, but few if any offer the

opportunity of viewing them in the context of the environment as it was at the time of the emigrants passage. This portion of the Applegate-Lassen Trail possesses this invaluable attribute. The interested person can follow the route of the trail through the Black Rock Desert equipped with the colorful accounts of the emigrant journalists viewing the same impressive vistas and totally immersing himself in the areas rich history without the disruption of modern freeways, machinery, or structures.

Though there are places where the trail has been eradicated or where later automobile roads have been superimposed, the route of the trail is fully documented in numerous journals, old maps, and survey reports and from these the route can be accurately inferred. There are, in addition, excellent traces of this segment of the trail which are readily visible.

Thus, based on its integrity of feeling and setting the "line of sight" protection is judged a viable recommendation for the Applegate-Lassen Trail Route from the Western Pacific Railroad tracks (west of Sulphur) to the entrance to High Rock Canyon.

John C. Fremont Trail--Summary and Recommendations

John C. Fremont passed through the District with a small exploring party in 1844. There is, of course, no actual physical trace of this one time passage. However, his route of travel was fully documented and mapped and the route followed by him between High Rock Canyon and Black Rock later became part of the Applegate-Lassen Trail. This gives further support to a line of sight exclusion for this portion of the Applegate-Lassen Trail.

The Fremont route from High Rock Canyon to the Western Pacific Railroad tracks near Sulphur and from the same to Granite Creek Station lies within a scenic corridor with vistas basically unaltered since Fremont's passage through the area in 1844. This portion of the trail is recommended for a line of sight exclusion.

The Fremont Trail, as it continues south of Gerlach into the southern arm of the Black Rock Desert and the San Emidio Desert, does not possess the historic integrity and scenic values of the northern Black Rock Desert portion of the Trail. The towns of Empire and Gerlach, the transmission line which runs at the base of the Fox Range, and the Western Pacific Railroad tracks already represent twentieth century visual intrusions. Thus, the integrity of feeling and setting has already been impacted and leasing in the area should not represent a threat to the area's historic integrity.

Nobles' Route--Summary and Recommendations

Most of the Nobles' cut-off between Rabbit Hole Springs and Trego Hot Springs is the present unimproved Highway 49. The connecting portion between Rabbit Hole and Highway 49 is also a dirt road used by modern vehicles. As Highway 49 has superseded the trail in this area, no exclusion from leasing is recommended.

From Trego to Granite Creek Station the trail crossed the playa and annual rains have eradicated visible traces. though the route is followed approximately by a present-day unimproved roadway. The Nobles' Route was improved into the Honey Lake Wagon Road in 1859-60, and the route of the trail is documented in Lander's Party survey notes.

This portion of the Nobles' route is also within the scenic historic corridor of the Black Rock Desert and a line of sight exclusion is recommended to protect integrity of feeling and setting of this area.

From Granite Creek to Buffalo Meadows the trail has been superseded by present roads. No traces of the original trail have been observed, though the watering holes at Deep Hole, Wall Springs, and Buffalo Meadows exist in a basically unaltered state. Exclusion from leasing for the above major campsites and watering holes is recommended.

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Corsen, Chris, BLM Archeologist, Susanville District, Susanville, California, 6/23/77.

Eilers, Thomas, Curator, Roops Fort Museum, Susanville, California, 6/7/77.

Dansie, Amy, Archeologist (Faunal Specialist), Nevada State Museum, Carson City, Nevada, 6/8/77.

Firby, Dr. Jim, Paleontologist, University of Nevada at Reno, 6/24/77.

Gianella, Dr. Vincent, Geologist, Auburn, California, 7/28/77.

Griffin, Dr. Robert, member of Trails West, Reno, Nevada, 7/7/77 and 7/8/77.

Harris, Dr. Everett, Vice-President, Emigrant Trail Marking Committee, Inc., University of Nevada at Reno, 3/2/77.

Helfrich, Devere, author of "Applegate Trail," Klamath Echos, 1971, Klamath Falls, Oregon, 6/14/77.

Hunt, Thomas, author of "Ghost Trails" and "National Monument Proposal", Palo Alto, California, 3/17/77, 4/19/77, 7/15/77, 7/7/77 to 7/8/77 (in field), 7/20/77.

James, Bill, coyote trapper and longtime resident of Imlay area, Humboldt, Nevada, 4/14/77 and 5/12/77.

Morris, Sandy, retired deputy and longtime resident of Winnemucca, Winnemucca, Nevada, 5/27/77.

Trego, Peggy and Robert, former feature writer and former editor of Nevada State Journal, Reno, Unionville, Nevada, 5/22/77 and 6/24/77.

Tingley, Icyl, member of North Central Nevada Historical Society, Winnemucca, Nevada, 7/28/77.

Zittel, Herman, Forest Service, Susanville, California, 6/16/77.

Maps

- Amesbury, Robert, 1967. "Routes Developed From Nobles Trail (1884)" and "Noble's Trail Map," Nobles Emigrant Trail, Lassen Litho, Susanville, California, p. 2, 18-19.
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- Hunt, Thomas, July 1977. Annotated map of Applegate-Lassen Trail and Nobles' Route and existing traces. Personal communication.
- Jackson, Donald, and Mary Lee Spence (eds.), 1970. The Expeditions of John Charles Fremont, Map Portfolio. University of Illinois Press, Urbana.
- James, Bill, May 1977. Sketch map of Applegate-Lassen Trail in Rye Patch to Rabbithole vicinity. Personal communication.
- Jefferson, T. Map of the Emigrant Road from Independence, Missouri to San Francisco, California. University of Nevada at Reno.
- U.S.G.S. Aerial Photos. Bureau of Land Management, Winnemucca, Nevada
- U.S.G.S. Historical Survey Plats. Bureau of Land Management, Winnemucca, Nevada.
- U.S.G.S. 7.5 series advance copy quadrants, and 1/250,000 Lovelock and Vya quadrants.

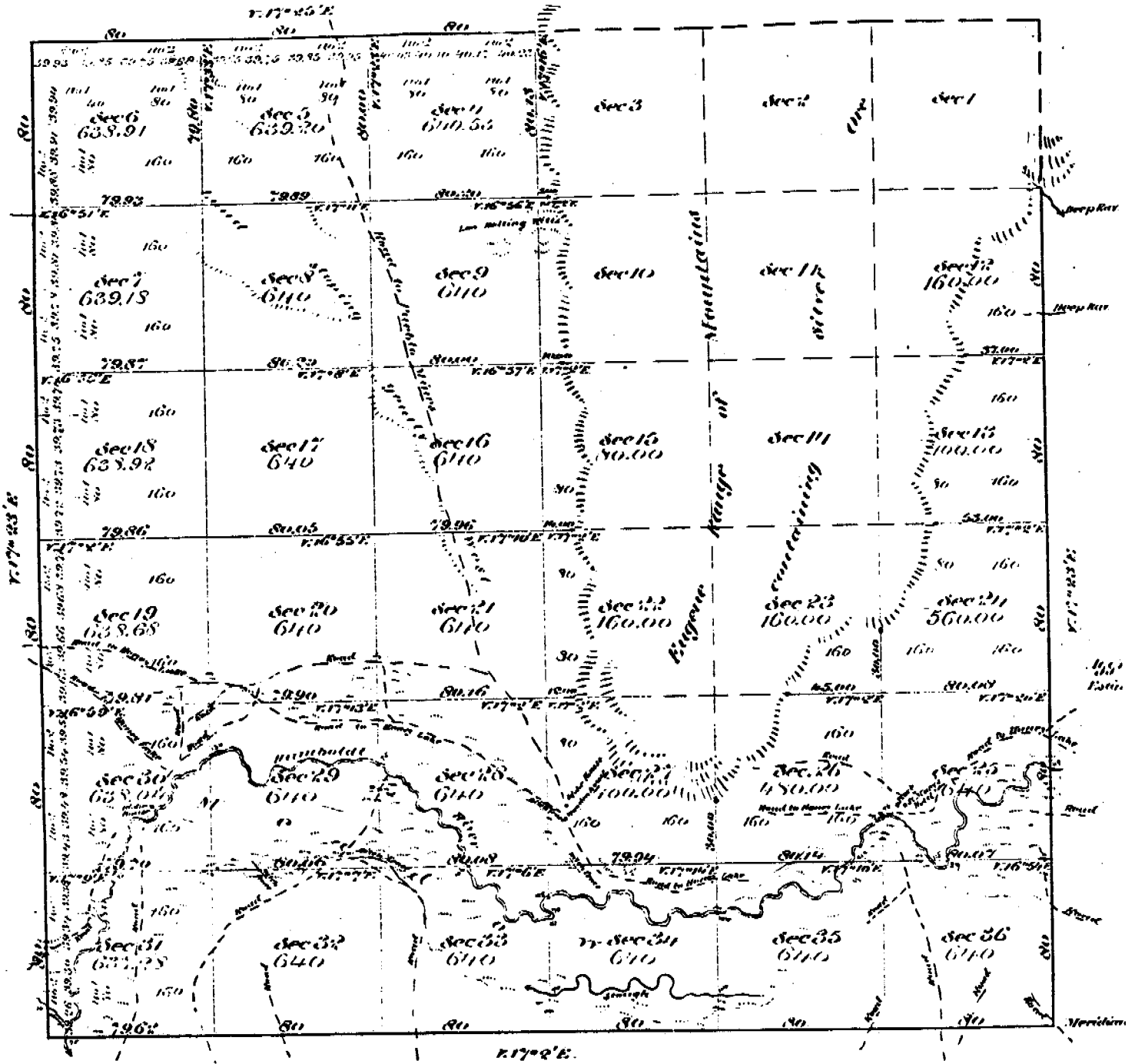
Appendix I

Historical Survey Plats

Township N° 33 North

Range N° 33 East

Mount Diablo Meridian



Surveyor Designated	By whom surveyed	Date of Certificate	Amount of Survey	When surveyed
Township lines	E. H. Dyer	October 1 st 1863	19 miles 29 rods 6 1/2 ft	1863

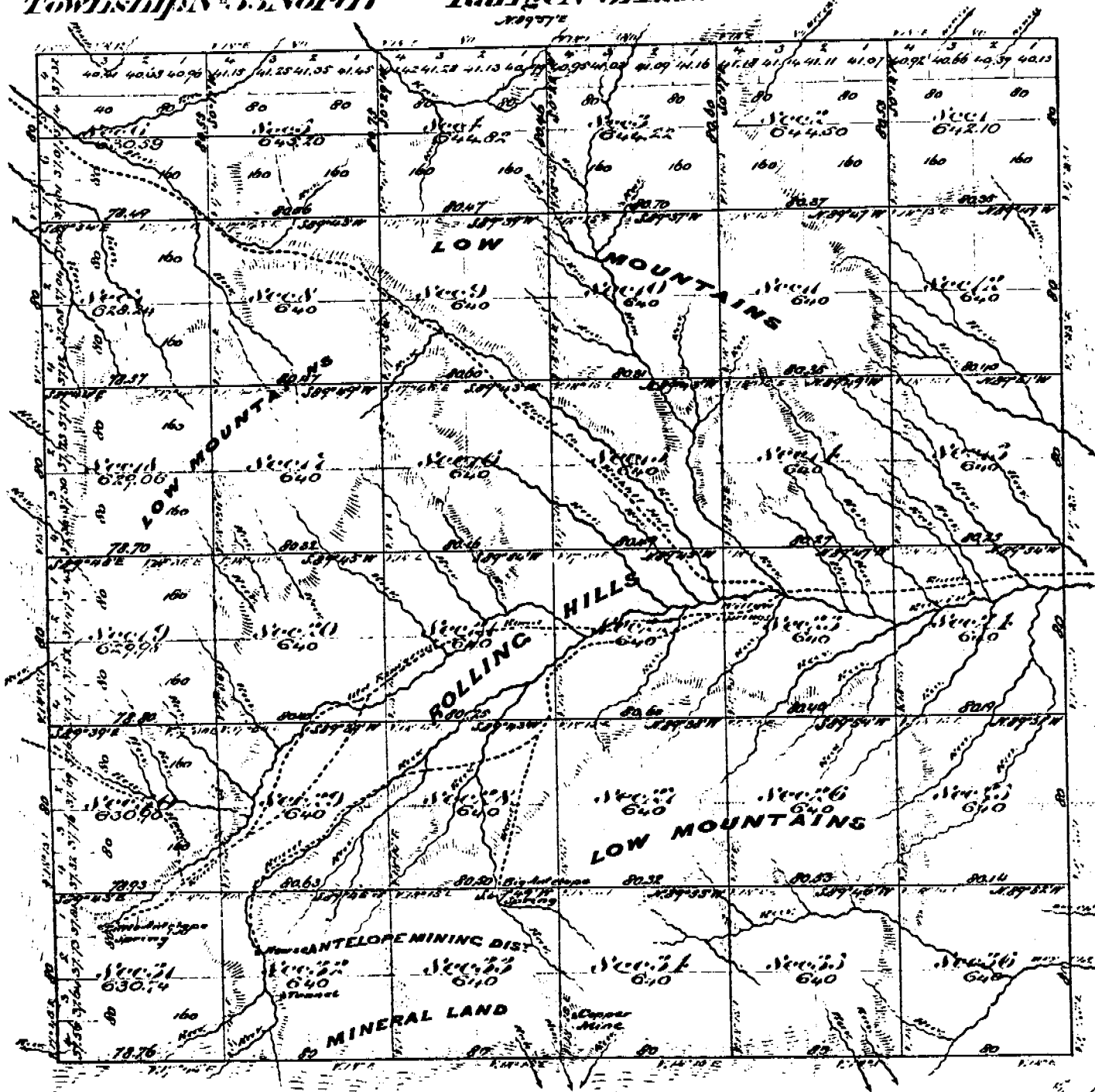
17 Cont.
17

The above Map of Township N° 33 North is strictly conformable to the which have been examined

Township N° 33 North

Range N° 3 East

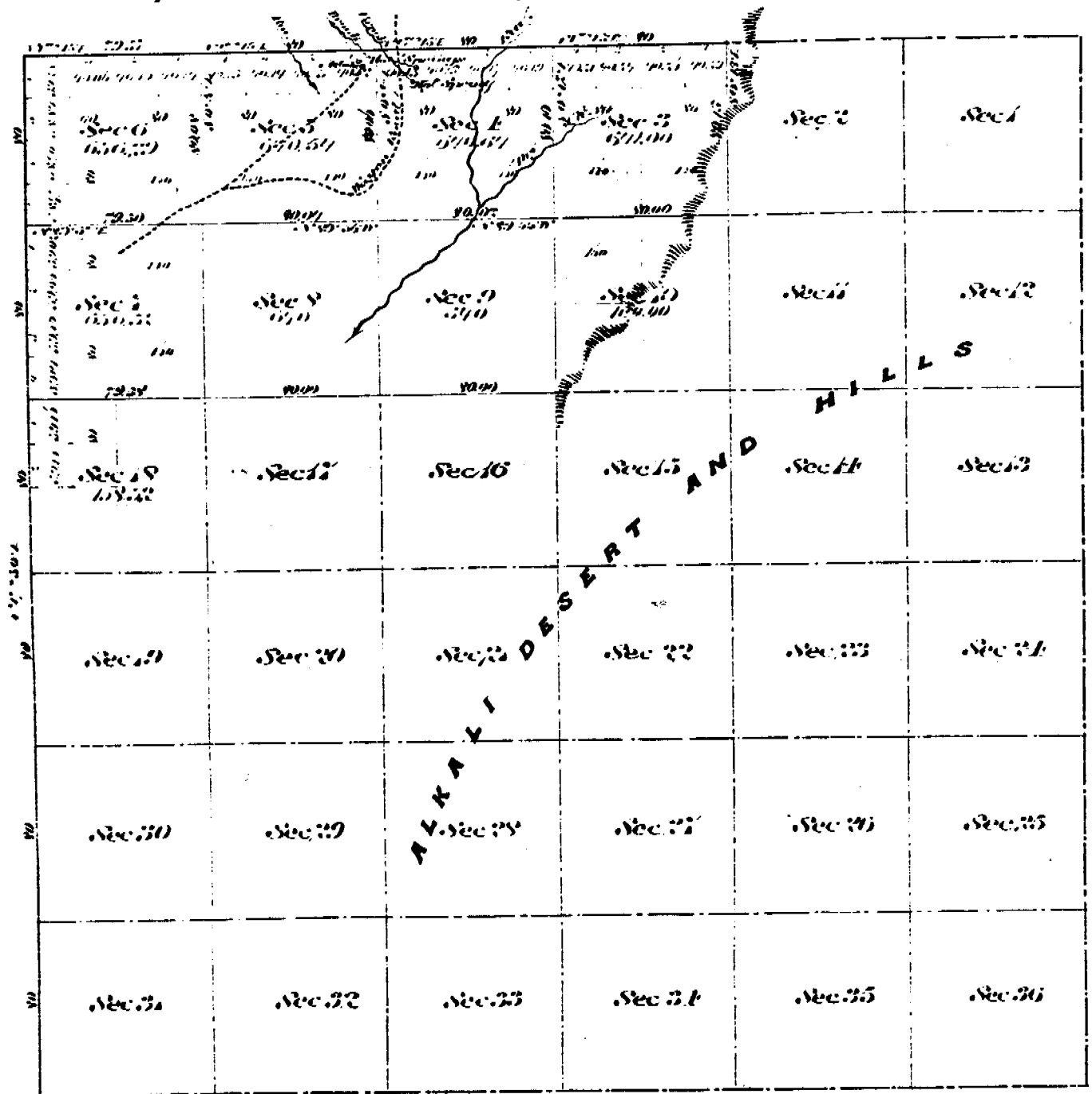
Mount Diablo Meridian



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Section 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36

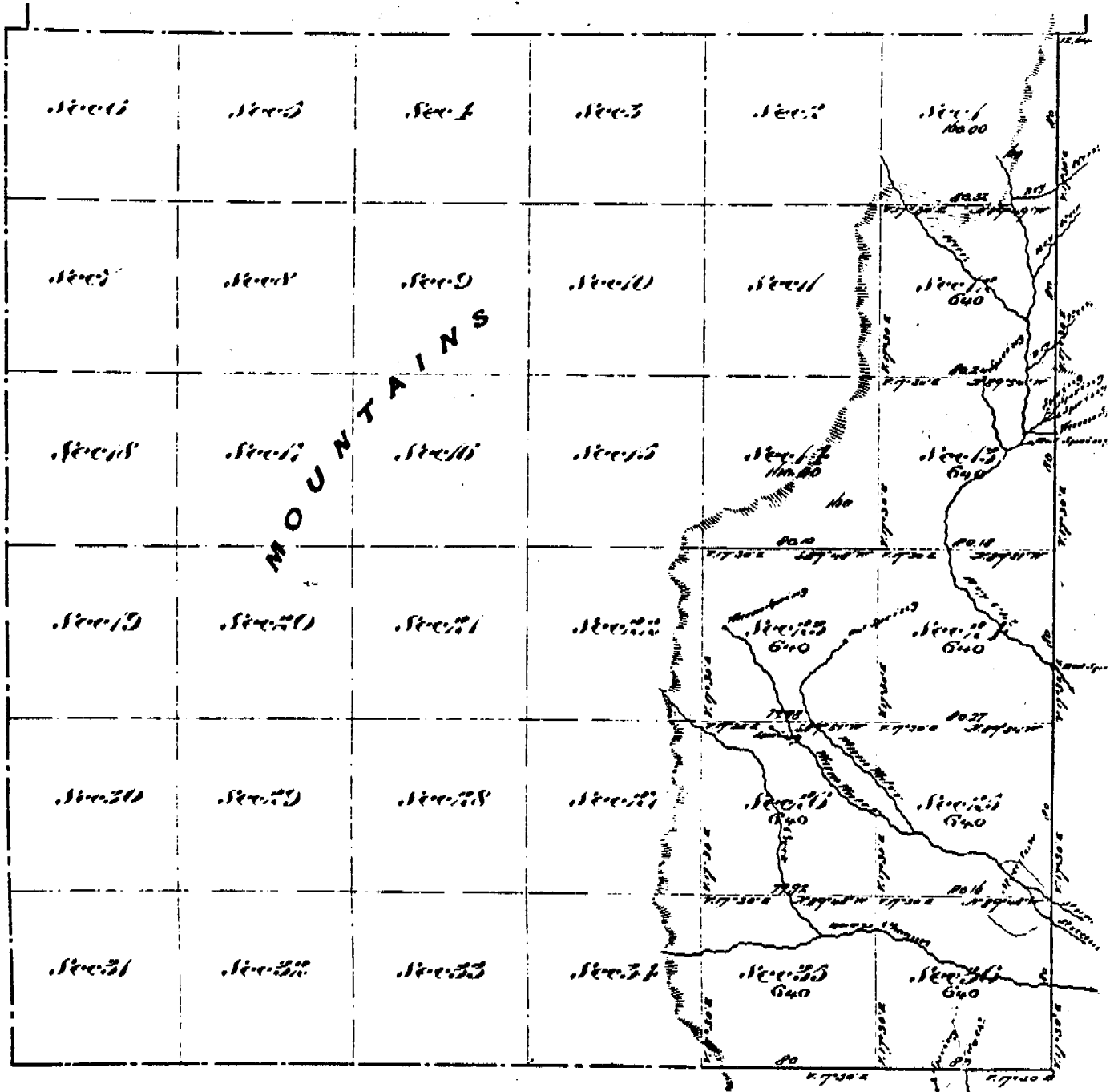
Township N^o 36 North Range N^o 36 East Mount Diablo Meridian



Township N° 40 North

Range N° 1 East

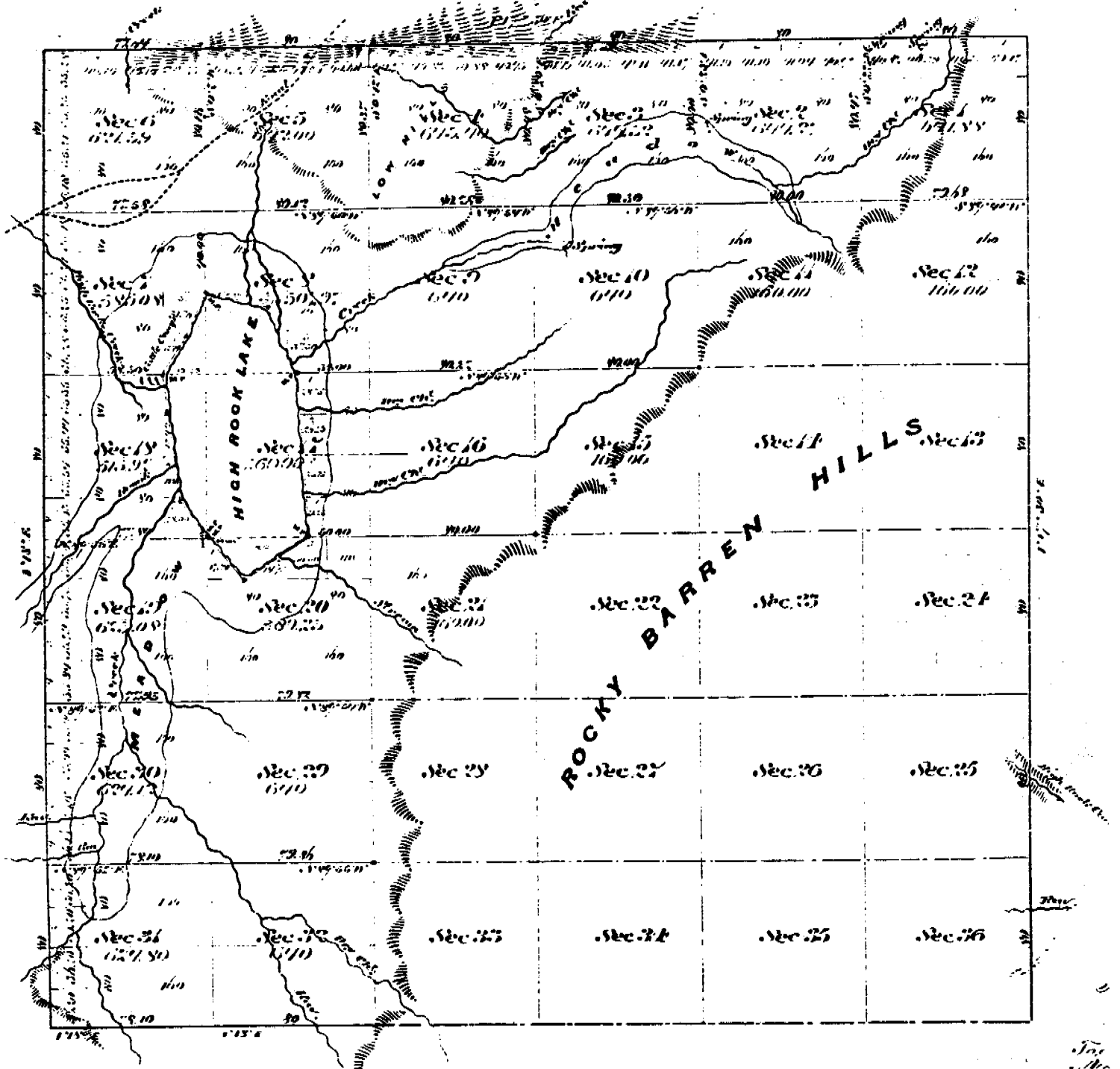
Mount Diablo Meridian



Township N° 39 North

Range N° 24 East

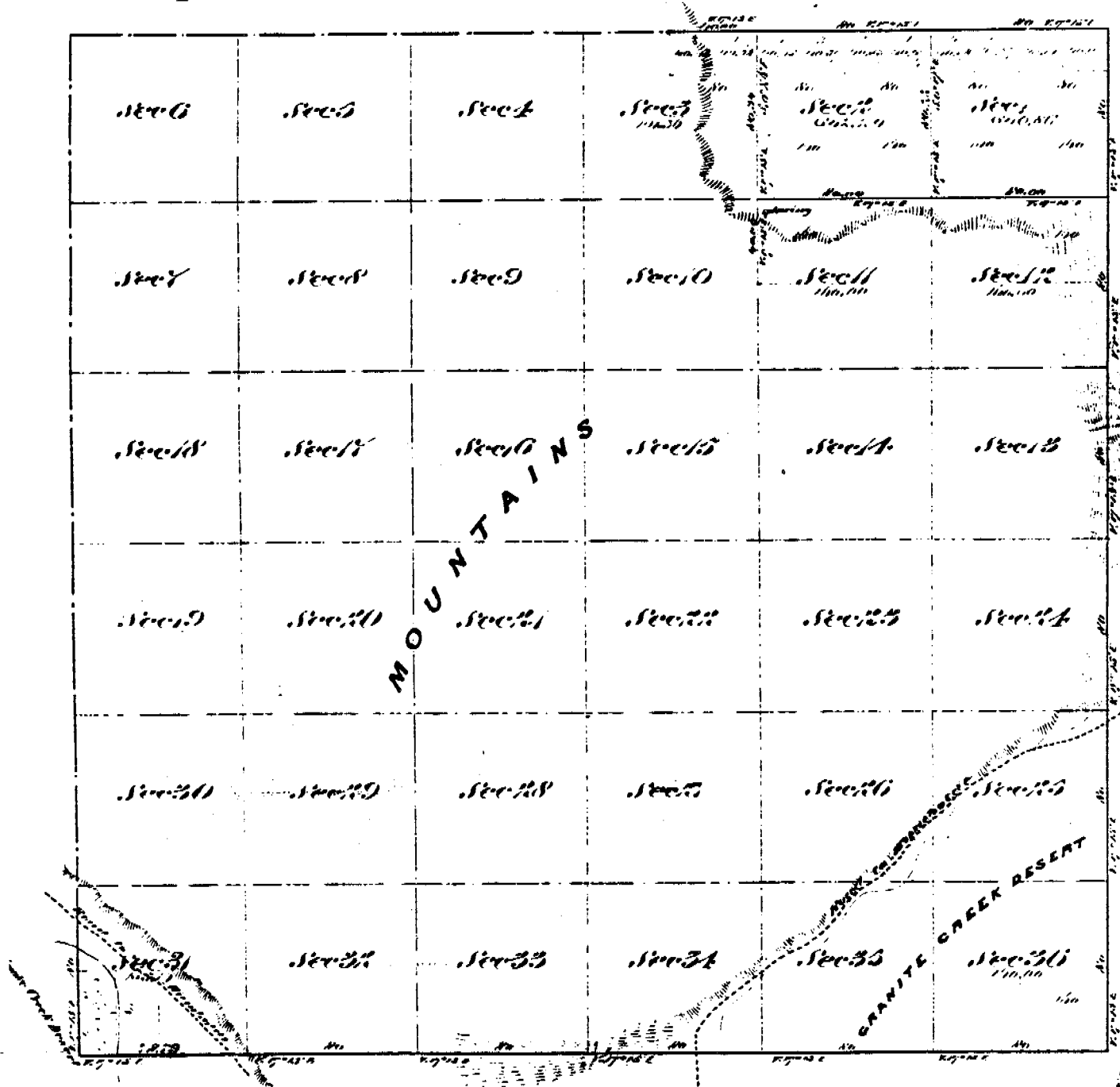
Mount Diablo Meridian



Township N° 33 North

Range N° 33 East

Mount Diablo Meridian



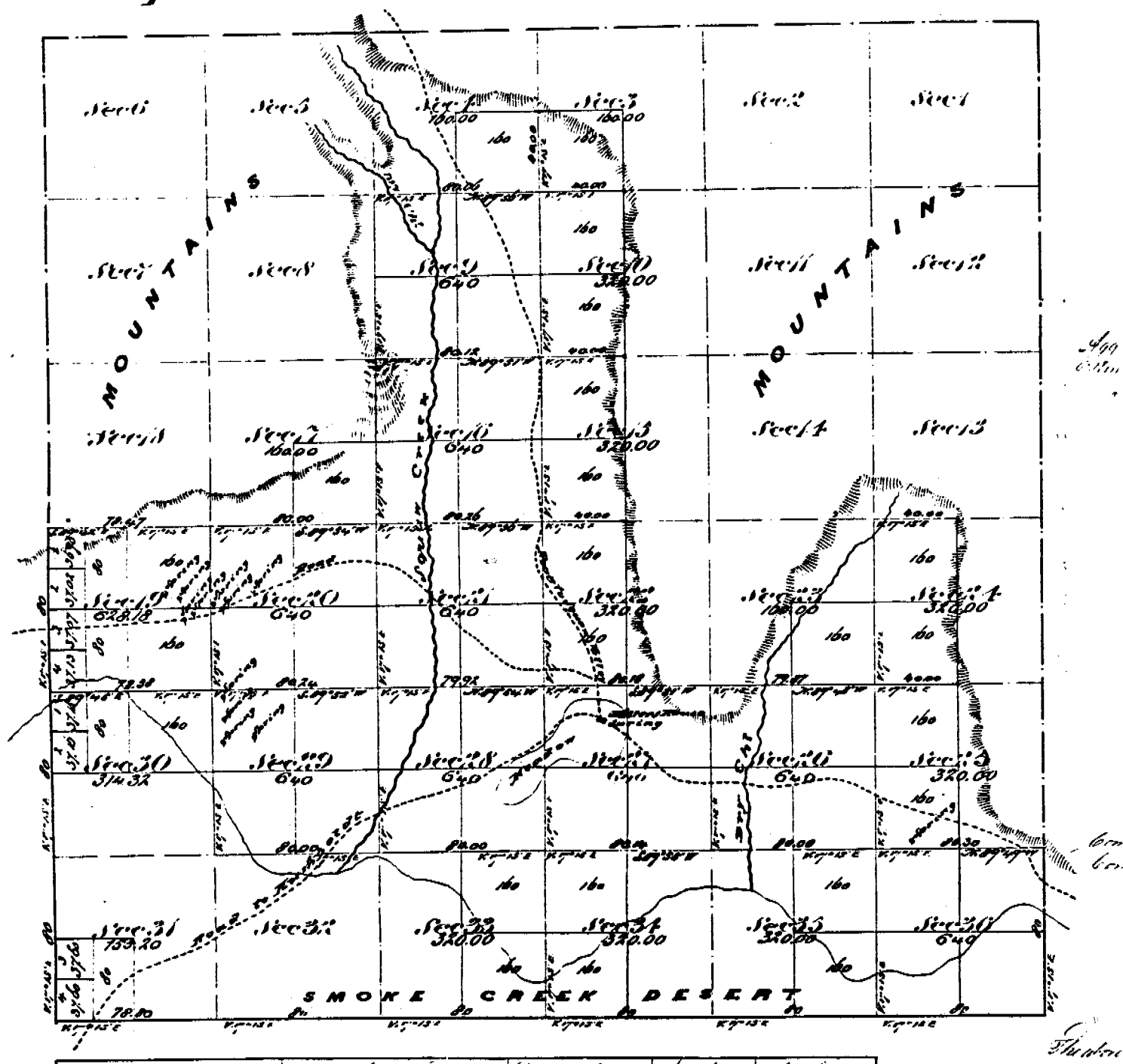
Survey Designation By whom Surveyed Date of Survey and Name of Surveyor

Section
in
the

Township N°33 North

Range N° 22 East

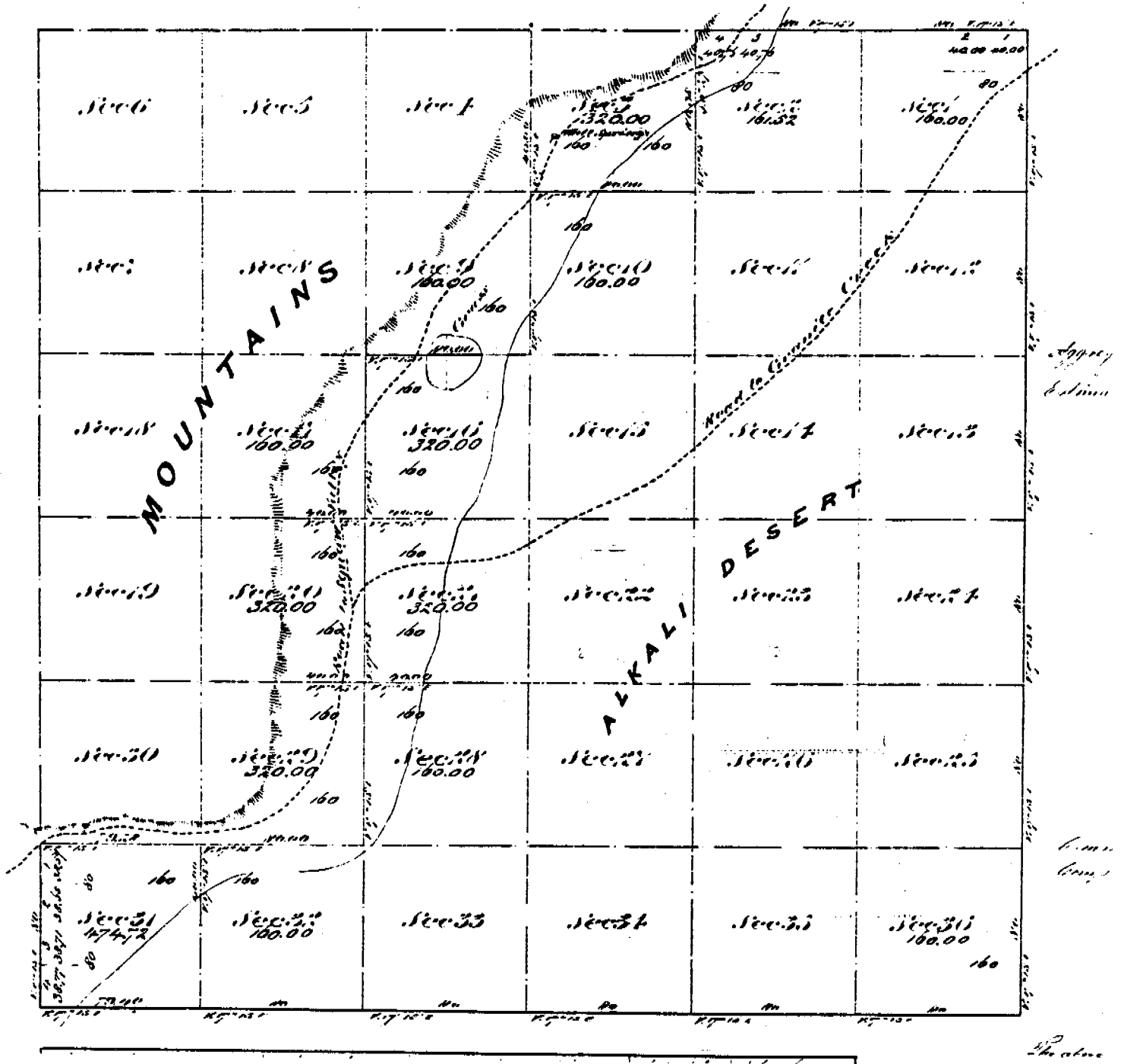
Mount Diablo Meridian



Township N° 33 North

Range N° 2 East

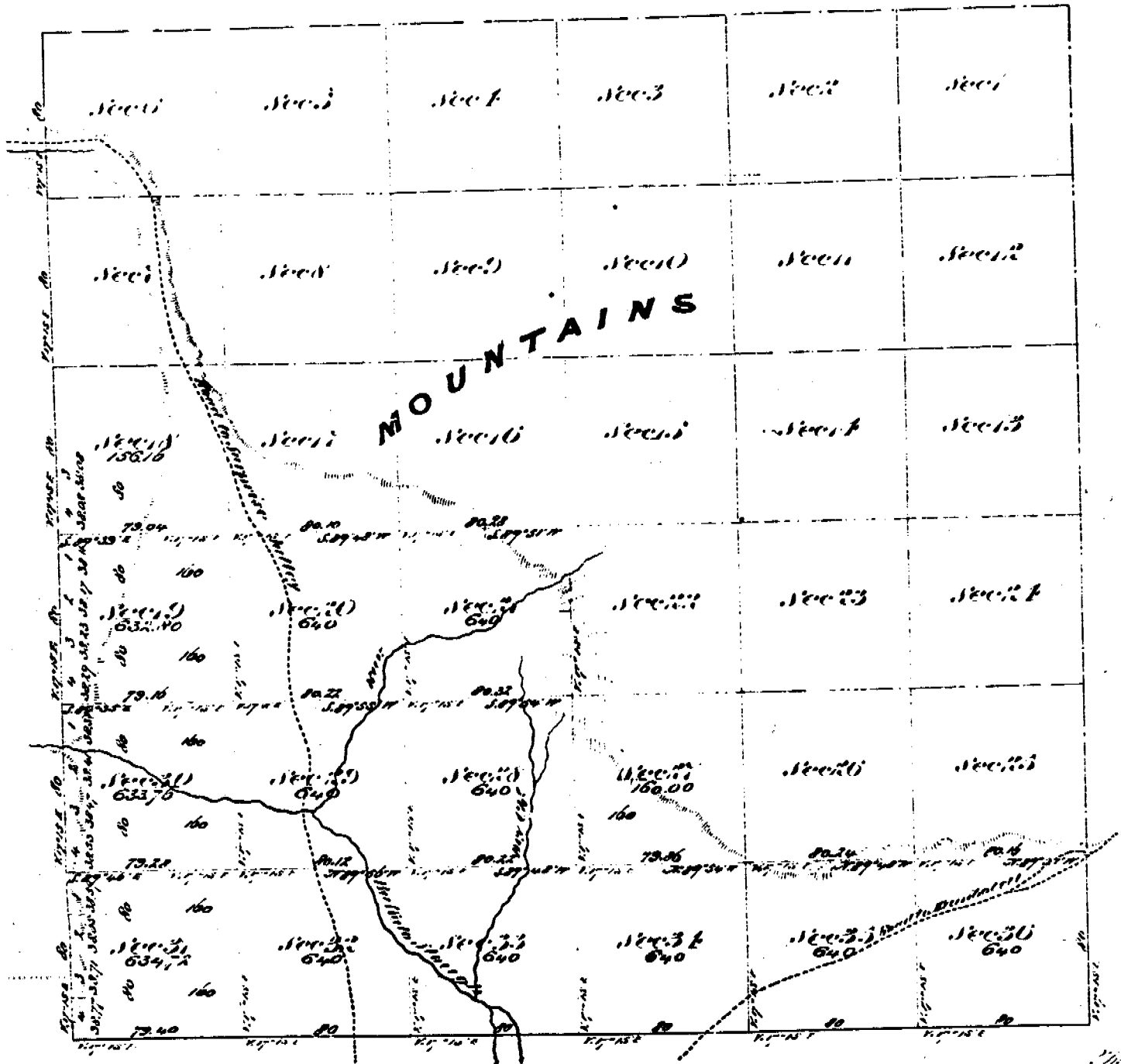
Mount Diablo Meridian



Township N° 32 North

Range N° 20 East

Mount Diablo Meridian



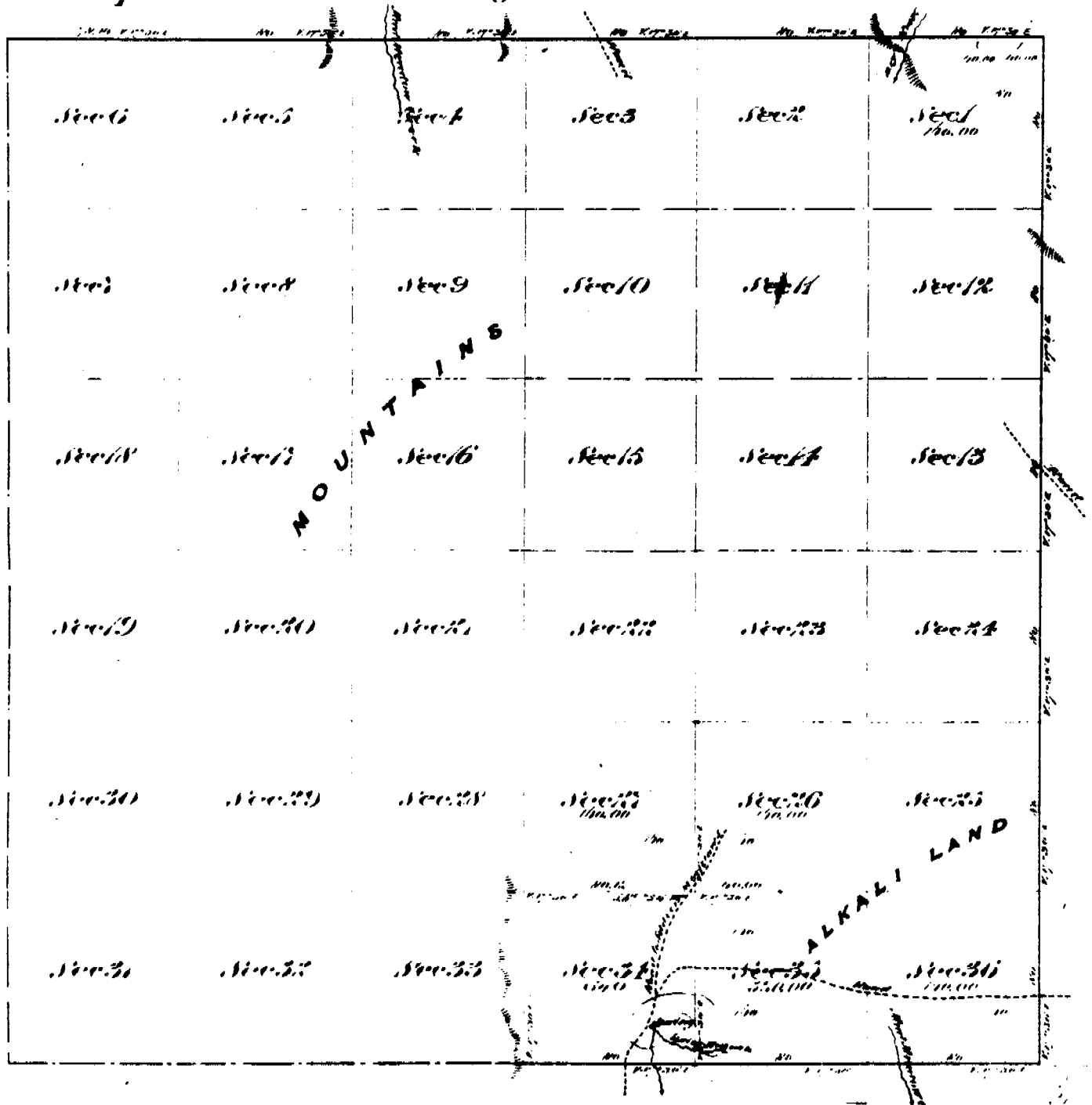
Surveyor's signature: J. M. ...

Witness: ...

Township N^o 18 North

Range N^o 4 East

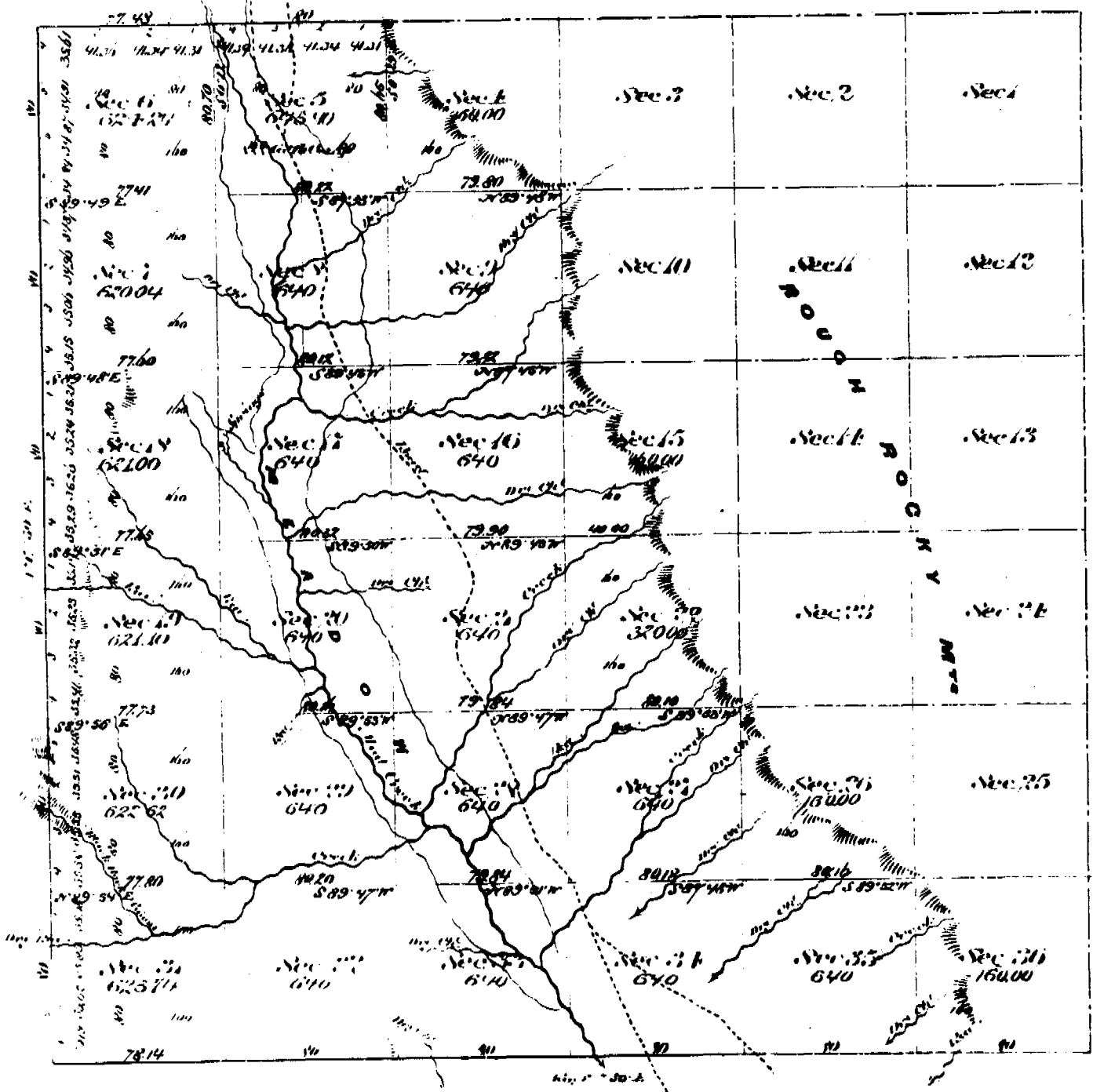
Mount Diablo Meridian



Township N^o 32 North

Range N^o 25 East

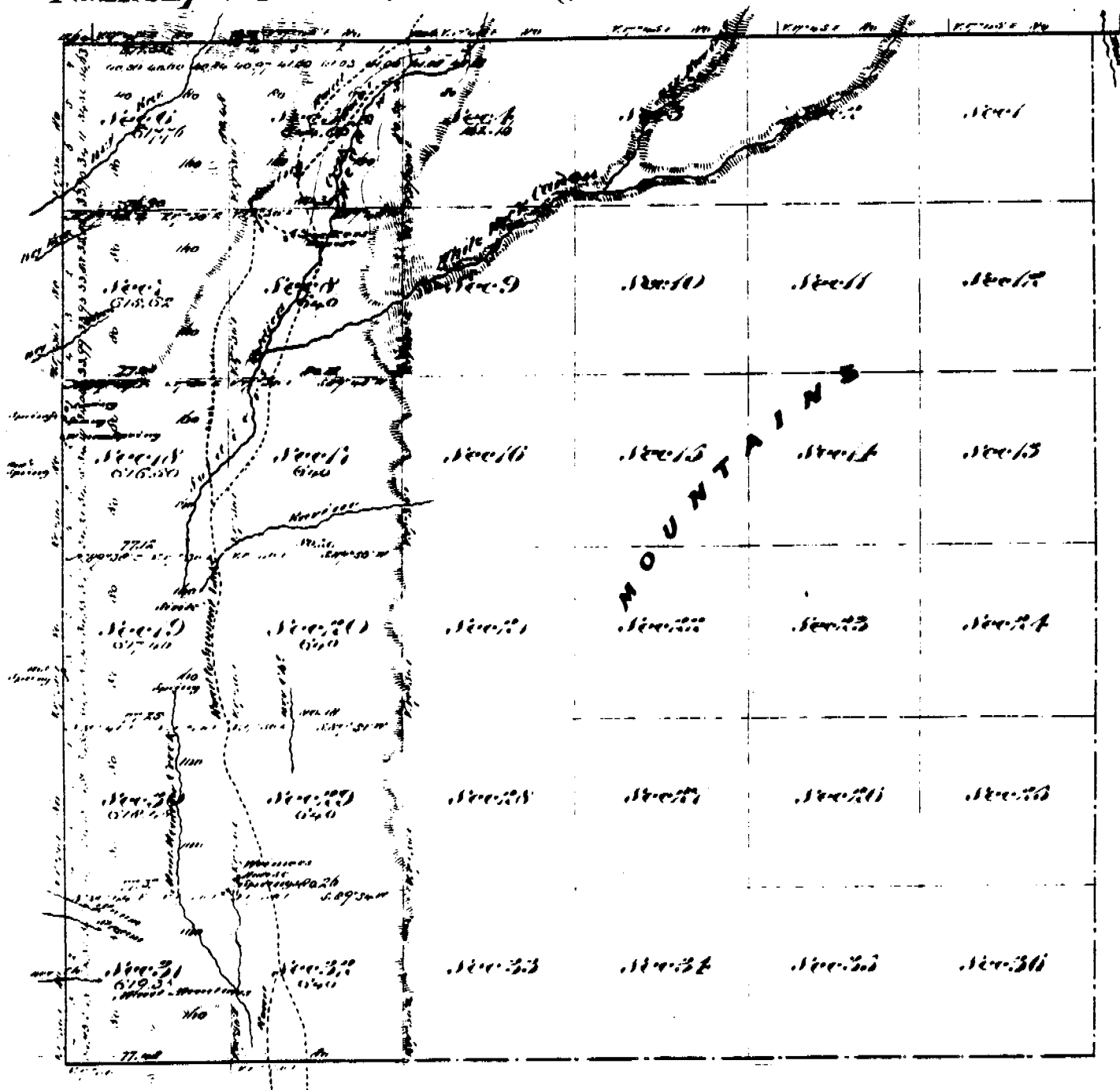
Mount Diablo Meridian



Township N° 40 North

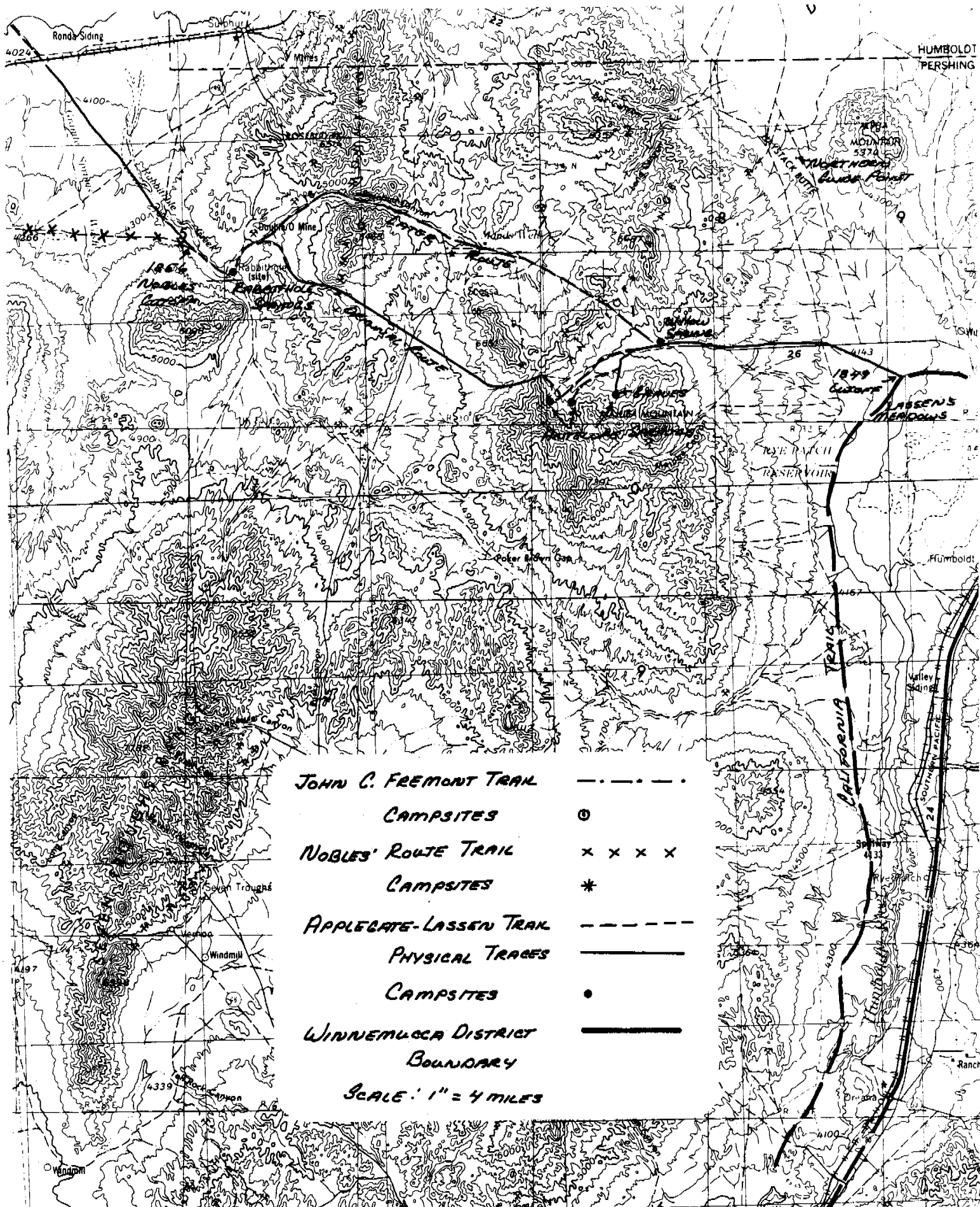
Range N° 24 East

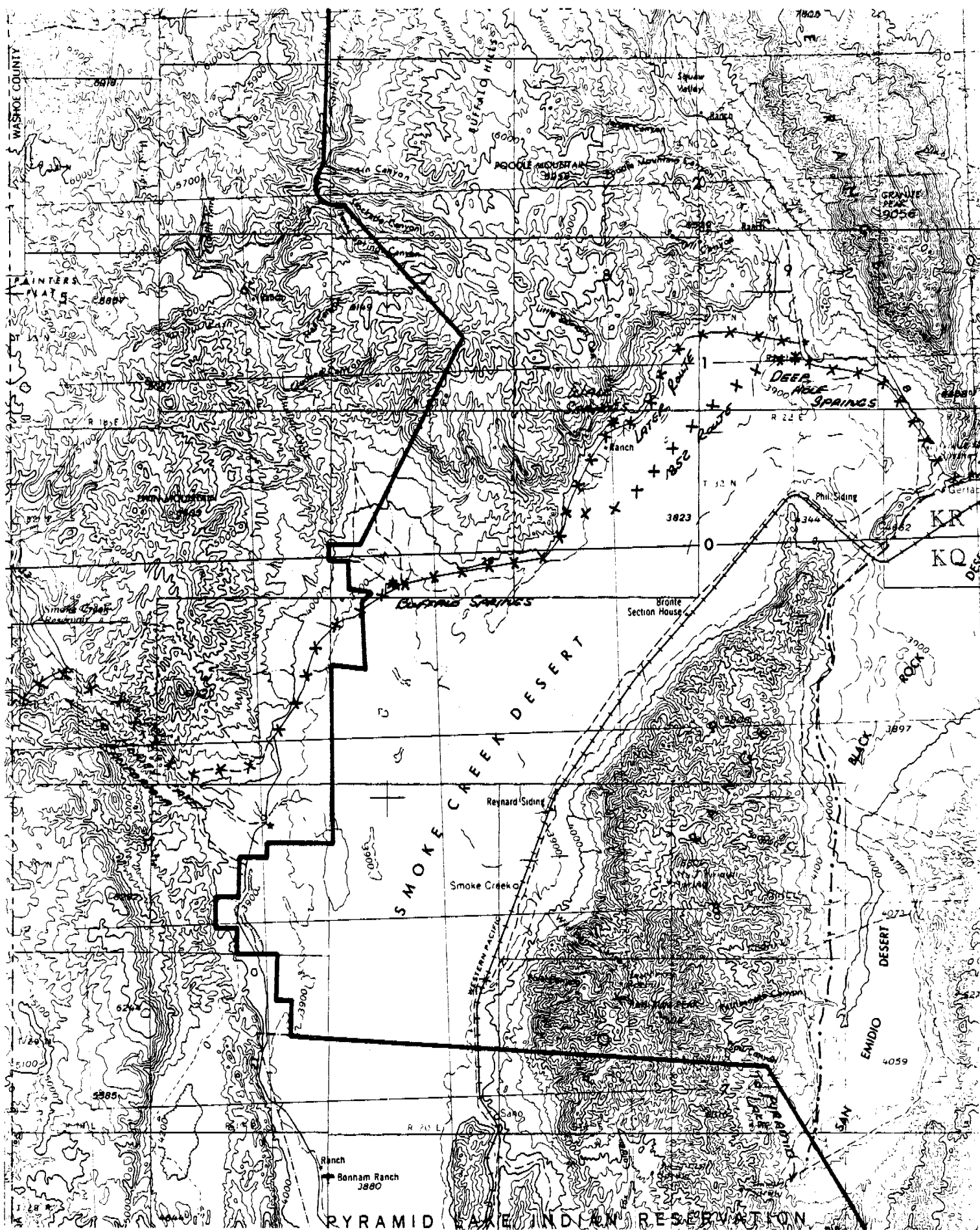
Mount Diablo Meridian

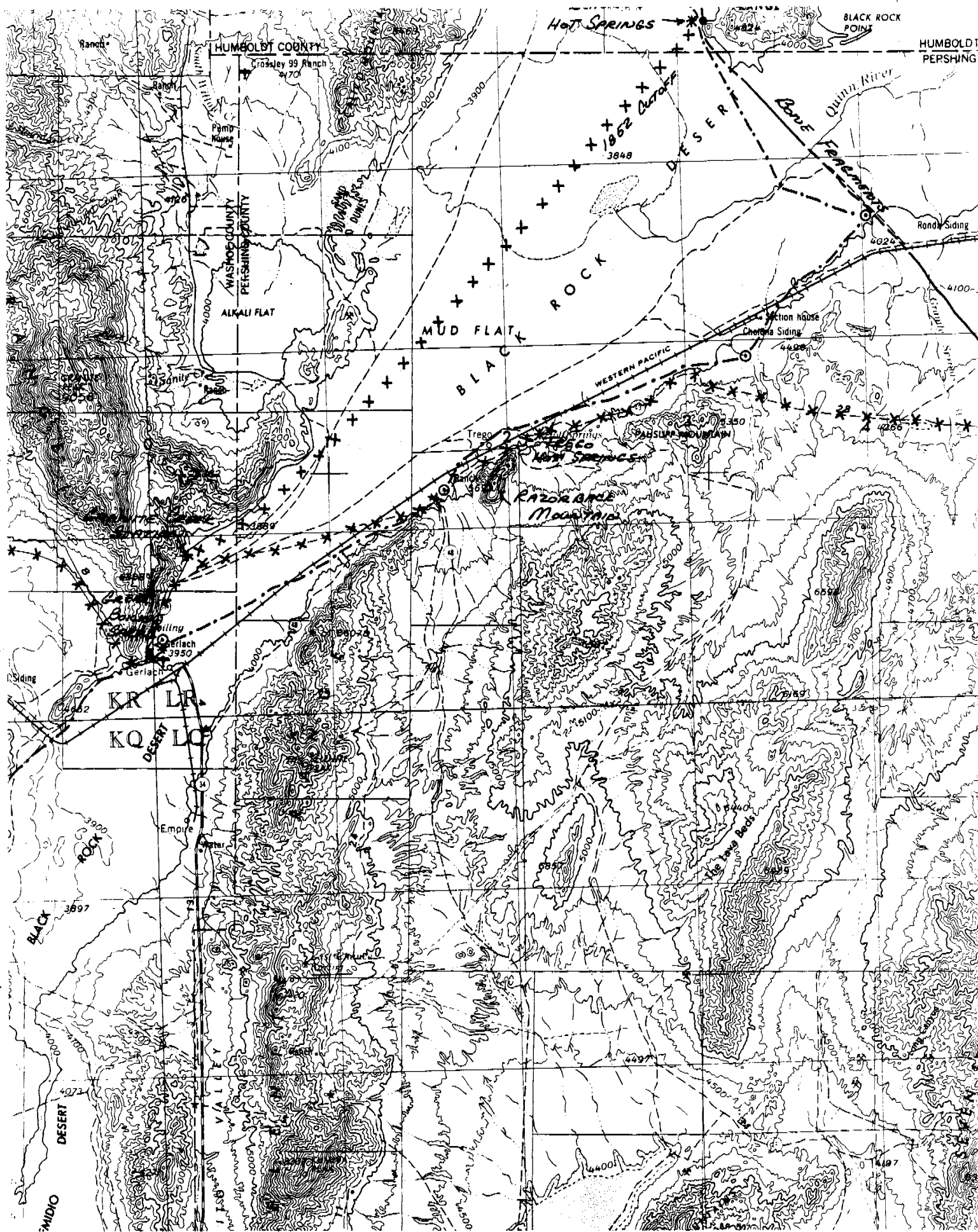


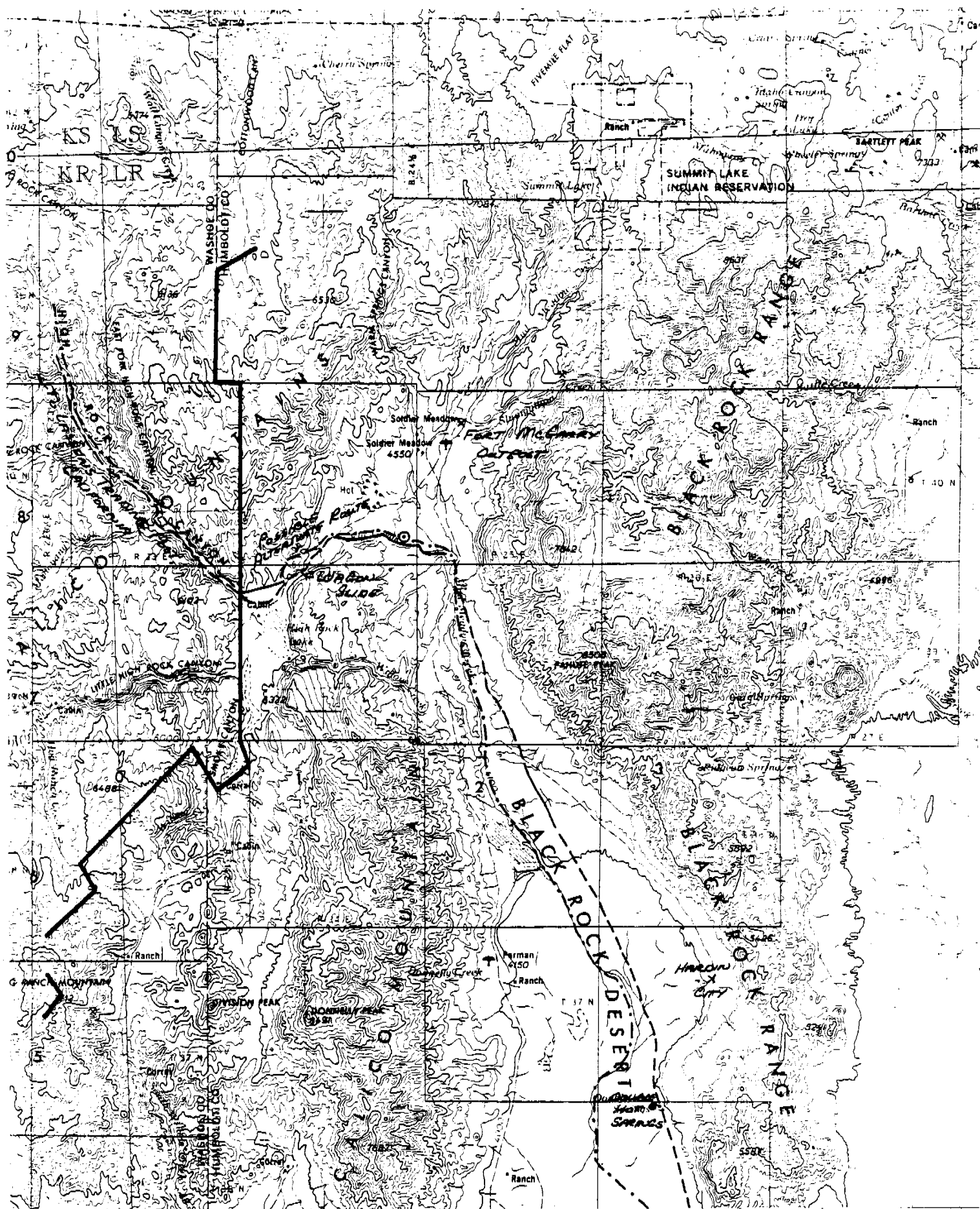
Appendix II

Map of Emigrant Trails in Winnemucca District









Addendum

1. Congress has authorized the study of a "Desert Trail" which runs from Canada to Mexico. The Park Service is currently studying the proposed hiking, horseback-riding trail, a portion of which probably will pass through the Black-Rock Desert along the general route of the emigrant trails. Entering the District at High Rock Canyon the trail would continue through Fly Canyon to Soldier Meadows and on to Double Hot Springs and Black Rock Hot Springs. From there it would progress to Gerlach and onto Pyramid Lake perhaps via the Smoke Creek Desert.
2. An informative book on the Black Rock Desert has been published since the completion of this report: Wheeler, Sessions, 1978, The Black Rock Desert, Caxton Printers, Ltd., Caldwell, Idaho. In his discussion of the Applegate-Lassen Trail (pp. 74-75) and on the map of the trails which accompanies the book, Wheeler indicates that the trail progressed from Double Hot Springs northwest to Donnelly Creek in the Calico Mountains. While emigrants occasionally turned off the main trail to obtain water, journalist entries for this portion of the trip indicate that the main trail continued straight up the valley east of Mud Meadows Creek rather than at the base of the Calicos as indicated by Wheeler's map (see excerpts from emigrant journals, pp. 56-58, this report).
3. Since the completion of this report, the Applegate-Lassen Trail has been placed on the National Register of Historic Places. The effective date for this listing was December 18, 1978.
4. The Black Rock Desert National Monument Proposal for the Black Rock Desert has been studied and rejected by the Park Service (9/79).